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ABSTRACT

The purpose of this study was to determine the skill areas that are generalizable across secondary vocational training program areas in the 32 vocational centers in Illinois. The major research problem was to (1) develop, validate, and determine the reliability of an instrument and (2) identify which mathematics, communications, interpersonal relations, reasoning, and other skills were generalizable across programs in secondary agriculture; business, marketing, and management; health; home economics; and industrial occupations training. Following a review of the literature, a survey instrument was developed and administered to 593 secondary vocational education teachers in the 32 vocational centers in the five program areas. The questionnaires gathered descriptive data regarding the relative importance of a list of skills, as perceived by teachers, in terms of being necessary for students to perform successfully in the vocational training programs in which they were enrolled. The results of the study suggested that the concept of generalizable skills existed and was reliable and valid in terms of being capable of identifying the skills that are basic to, necessary for success in, and transferable/common across secondary vocational training programs. Students need high levels of skills in the generalizable skill areas of mathematics, communications, interpersonal relations, and reasoning to succeed in several secondary vocational training programs. Recommendations were made to periodically update the list of generalizable skills and to explore other skill applications. (A list of the generalizable skills and the areas to which they relate is included in the document.) (KC)

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Identification of Generalizable Skills in Secondary Vocational Programs

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Introduction

Nature of the Problem

During recent years increased public attention has focused on the skills and abilities needed to participate in our society. Skills required to live independently and to obtain gainful employment have become more emphasized in both educational settings and the world of work. In particular, the field of vocational education has begun to focus attention in the area of basic skills. Acquisition of basic skills is commonly believed to be necessary for success in vocational training programs and occupations.

Several federal initiatives have recognized the necessary relationship between vocational education and basic skills. The belief that vocational skills and basic skills in combination contribute to occupational competence is noted in the priorities set by the Office of Vocational and Adult Education in the U.S. Department of Education which maintains that "Basic educational skills are essential to all persons, and vocational education must complement basic skills/remedial programs if persons are to succeed in vocational education programs... Both academic and vocational programs should complement and further one another in producing persons who are prepared to function responsibly in a working world" (Federal Register, June 13, 1979, p. 33961). In addition, the Carnegie Council on Policy Studies in Higher Education reinforced this notion and recommended that the basic skills for the secondary school "should concentrate on the skills of literacy and numeracy, and good work habits" (Carnegie Council on Policy Studies in Higher Education, 1979, p. 24). Underlying the Youth Act of 1980 was the belief that the "lack of basic communication, comprehension, and computational skills is the most serious barrier between young people and successful entry into the labor market " (Youth Employment Initiatives, Note 1, p. 3, 1980).

An important problem or question that has arisen when vocational education attempted to address the issue of basic skills has been defining what actually constitutes "basic skills." For example, what are "basic skills" basic to? Do "basic skills" relate to vocational programs and/or the occupations for which they train? Are "basic skills" essentially derived from academia and assumed to be necessary and related to success in vocational programs and employment settings? These and other questions and issues suggest that vocational education needs to look at basic skills in ways different than "academia" has traditionally. Vocational education needs to relate basic skills directly to its programs and services and its expected outcomes.

The research on basic skills and occupations suggest that basic skills are critical to employability and occupational competence because these skills are transferable in that they have applicability to a broad range of occupations and jobs (Pratzner, 1978, 1981; Stump, 1978). Stump (1976) has described transferable skills as the "skills and abilities which an individual brings with him/her from job to job, and which apply in each job (p. 15)." The wide applicability or transferability of basic skills is particularly important since many people change occupations several times and that the labor market demands change. Transferable skills also may be critical to the successful transfer of the more task-related skills (Hoyt, 1977). However, having transferable skills will not guarantee occupational competence and adaptability, although they should facilitate it (Pratzner, 1978).

Most recently, the ideas of basic skills, transferable skills, and the skills and abilities needed for success in vocational programs and occupations have been conceptualized in terms of generalizable skills. The concept of generalizable skills is commonly concerned with the transferability of cognitive, affective, or psychomotor skills which are necessary for success across vocational programs and occupations (Greenan & Smith, 1981; Greenan, 1982). Frequently, proficiency in cognitive and affective skills may be prerequisite to proficiency in vocational psychomotor skills. Thus, the concept of generalizable skills can be viewed as a procedure for identifying those skills and abilities necessary for success in vocational/ technical programs and occupations.

A foundation in the generalizable skill areas of reading, writing, and computing is widely regarded as essential for students' subsequent learning both at school and at work (Chatham, Johnson, & Peterson, 1981). The acquisition of such skills is especially important in reducing unemployment of minority, disadvantaged, and handicapped students (Saxon & Deutsch, 1976; Maxwell, Cleary, Lubbers, & Ireland, 1977; Corman, 1980; Johnson, 1981). For example, it has been noted that mathematics skills are not only required for success in vocational training and employment but also in daily living (Edwards, Nichols, & Sharpe, 1972; Long, 1979; Riehs, 1981). This is also true for reading skills (Scott, 1975, Scott-Hunter, 1978; Thornton, 1979; Wirszup, 1982). In addition, the more broadly defined "English" or communications skills have been cited as being necessary in vocational programs (Duke, 1976; Davis, 1980). Further, Miguel (1977) described several programs noting the need for interpersonal skills.

Although "basic" skills are considered critical for successful entry into the labor market, for upgrading skills, and for retraining, minimal information is available concerning the level of similar skills attained by vocational students in secondary programs (Harmon, 1970; Corman, 1980). In addition, "virtually nothing is known about differences in competence in basic (or generalizable) skills among students in different vocational programs (Corman, p. 1)." However, the available national and state studies suggest that vocational students' level of basic skills proficiencies are generally below the average of the entire student population (Hilton, 1971; Lotto, 1973; Echternacht, 1975; Alexander, Cook, & McDill, 1977; National Longitudinal Study, 1977; Massachusetts Assessment of Basic Skills 1978-79, 1979; Corman, 1980). For example, in reading, writing, and mathematics tests vocational students typically score about one (1) standard deviation below "academic" students. Vocational educators, therefore, commonly work with students characterized by low levels of performance in basic or generalizable skill areas. If ignored, this deficit could hinder the performance of vocational students in post-secondary training and in obtaining employment.

Employers have also noted the importance of providing secondary vocational students with the "basic skills" necessary for entry-level employment (Wiant, 1977; Brickell & Paul, 1978; Ashley, Laitman-Ashley, & Faddis, 1979; Faddis, Duckles, Woditsch, & Brower, 1980; Johnson, 1981). Lusterman (1977) noted that employers of 610 companies with 500 or more employees stated that skills in areas such as reading, writing, mathematics, and interpersonal skills are especially important.

In summary, vocational education probably has not emphasized the acquisition of "basic skills" or generalizable skills to a large extent, although, students have continued to acquire the vocational/technical skills. However, students have not typically acquired the other kinds of skills, such as, attitudes and interpersonal skills necessary to succeed in vocational programs and occupational settings (Craven, 1977; Faddis, 1979). Many occupations have an array of skills and work settings, some of which have substantial "manual components" - the traditional realm of vocational education, but may require "special intellectual and/or social skills" (McKinlay, 1976). However, vocational program course content concentrates almost exclusively on technical skills (Evans, 1971; McKinlay, 1976). Educators often overlook or pay little attention to the social skills and knowledge that are common throughout an occupational field, which can be learned in advance of entering employment. The acquisition of similar skills may best be facilitated by combining them with vocational training and/or work opportunity development (Vice-President's Task Force on Youth Employment, 1980). Improvement of generalizable skills of vocational students is critical and will become even more important as our economy becomes more technologically sophisticated and information-oriented (Sawhill, 1979).

Statement of the Problem

The central problem investigated in this study was to determine the skill areas and skills which are generalizable within and across the secondary vocational training programs in the 32 area vocational centers in the State of Illinois. The specific research problem was to (a) develop, validate, and determine the reliability of an instrument, and (b) identify which mathematics, communications, interpersonal relations, reasoning skills, and other skills that were generalizable within and across secondary agricultural; business, marketing, and management; health; home economics; and industrial occupations training programs.

Objectives of the Study

Instrument Development and Validity

1. Identify and validate a list of skills which is potentially generalizable and related to success in secondary vocational training programs.

2. Construct a survey questionnaire to assess the relative importance of a list of skills as it relates to the content of secondary vocational training programs.

Reliability

3. Determine the reliability of the Generalizable Skills Importance Questionnaire in terms of internal consistency reliability.

Skills Identification

4. Identify the skill areas and skills that are generalizable within and across secondary vocational training program areas and programs.

Definition of Terms

Knowledge - Information, data, or understandings in the cognitive domain that are used to guide behavior (Faddis, 1979).

Skill - An interactive component that, along with knowledge and attitudes, underlies learned behavior (Pratzner, 1978).

Basic Skill - A skill having broad applications and multiple uses, and potentially highly transferable (e.g. reading, writing, and arithmetic) (Pratzner, 1978).

Functional Skill - Mastery, the ability to transfer and apply a skill(s) (skills, knowledge, and attitudes) in various and novel situations (Pratzner, 1978) . . . a skill(s) around which jobs are defined, recruitment organized, curriculum and mobility designed (Fine, 1974, pp. 287-288) . . . Skill(s) applied to everyday life (Northcutt 1975) . . . Skill(s) required to deal with the basic tangibles of the everyday world namely: data (or information), people, and things; transferable across time and across jobs (Bolles, 1978) . . .

Transferable Skill - A skill or ability which has applicability to a broad range of occupations and jobs (Stump, 1978).

Generalizable Skill - A cognitive, affective, or psychomotor skill (or skill area) which is (a) basic to, (b) necessary for success in, and (c) transferable (or common) within and/or across secondary vocational training program areas and programs (Greenan & Smith, 1981; Greenan, 1982).

Significance of the Study

Vocational education has become increasingly aware of the need to provide all students with appropriately designed individualized instruction and support services necessary to succeed in vocational programs. Students frequently enroll in vocational programs with below average proficiencies in skill areas, such as reading and mathematics. Typically students' skill levels may be one (1) standard deviation below the entire student population. At the same time, reading, mathematics, and other skills may be very important to succeed in vocational training programs and occupations. However, although students may continue to acquire the essential vocational/technical competencies for a given occupation, in many instances they may be unsuccessful in completing their vocational programs and not increase their proficiencies in the generalizable or "basic skill" areas. In addition, vocational education (and other fields) has often used standardized tests to classify students, assess students' learning problems, and guide curriculum development. These tests and procedures frequently have had a questionable relationship to the content of vocational programs. Thus, their reliability and validity are suspect regarding usefulness and application for vocational students and school personnel.

This study attempted to identify those generalizable skills which are basic to, necessary for success in, and transferable or common within and/or across secondary vocational training program areas and programs. The expectation is that the results of this study will provide vocational teachers, administrators, counselors, and other school personnel with information regarding the generalizable skills requirements in secondary vocational training programs. The information should assist in individualized program assessment, planning, implementation, and evaluation. School personnel will become aware and should begin or continue to deal with the problem of providing students with all the necessary instructional, remedial, and support services to successfully complete vocational programs and enter occupations.

This study also provides a basis for eventual development of functional assessment procedures and strategies with which students, teachers, and other school personnel can measure students' generalizable skill levels. The subsequent procedures and instruments could assess learning abilities or diagnose and identify those students who may have functional learning problems. The information from such assessments could suggest remedial needs, and provide a basis for determining and delivering the appropriate support services and instruction needed to succeed in vocational programs.

Review of the Literature

The goal of this study was to provide the field of vocational education with a core of skill areas and skills which are generalizable within and across secondary vocational training program areas and programs. The major research problem was to (a) develop, validate, and determine the reliability of an instrument; and (b) identify which skill areas and skills were generalizable within and across secondary agricultural; business, marketing, and management; health; home economics; and industrial occupations training programs. In order to investigate the problem more closely, the current and available literature with respect to research in basic skills, transferable skills, and generalizable skills was reviewed, analyzed, synthesized, and summarized.

Research in Basic Skills, Transferable Skills, and Generalizable Skills

The identification and classification of skills related to education and employment settings has been of interest for many years. Several years ago, Spearman (1927) and Guilford (1959) attempted to identify the intellectual abilities that discriminate among individuals. Kibler, Barker, and Miles (1970), and Fleishman (1975) studied individual variation in psychomotor skills and developed taxonomies on them. Numerous attempts have been made to identify or specify skills or characteristics that contribute to one's employability including social perspective, basic skills, career choice, job search skills, functional skills, adaptive skills, occupational specific skills, and credentials (Brantner & Enderlein, 1973; Walther, 1976; Nation Assessment of Educational Progress, 1977; Bolles, 1978; Darr, 1980; Manpower Demonstration Research Corporation, 1980; U.S. Department of Labor, 1980; Johnson, 1981). Several more recent studies have focused on the concept of transferable skills as applied to occupations, vocational programs, or skills that differentiate people from one another (McKinlay, 1976; Altman, 1976; Sticht, 1978; Mikulecky & Dehl, 1979; Moe, Rush, & Storlie, 1979; Boyd & Cline, 1981; Moorehouse, 1981; Harding, 1981, Baker, 1981).

A comprehensive attempt to classify occupations according to transferable or generalizable skills was the third edition of the Dictionary of Occupational Titles (DOT) (U.S. Department of Labor, 1965). The DOT has been cited as being too general and not specific enough about those skills which are required in jobs. However, the DOT is so broad that it is probably not possible to be specific. The worker trait groups were developed by grouping the jobs into 22 general areas according to commonalities on educational requirements, vocational preparation, aptitude, interests, temperaments, and physical demands. The 22 general areas were further broken down into the 114 worker trait groups that are included in Volume II. For each group there is specification of the DOT codes represented by the jobs in the group of the educational requirements, vocational preparation, aptitudes, interests, temperaments, and physical demands. Each occupational title has a 6-digit code number. The last three digits indicate the way in which the job requires a worker to deal with data, people, and things. Each digit describes the skills or categories of skills that are the central elements of the job. These do not reflect all the ways workers may deal with data, people, and things, only those required for successful performance. They also do not reflect other job characteristics such as the relative amount of time spent dealing with data, people, and things (Greenan & Smith, 1981).

Altman (1968) described a domain of general vocational capabilities while suggesting methodological improvements in the derivation of educational goals for general vocational capabilities. A sample of 31 occupations was selected within the occupational fields and associated tasks were then identified. A random sample of tasks was selected for each occupation with questions written in multiple choice format for each task identified. Tests were adminstered to approximately 10,000 ninth grade through junior-technical college students in two different school systems. Sex differences emerged on the different tests which suggested that vocational content might be arranged along "some underlying continuum such as hardware-to-people." Twenty-four vocational capabilities tests were developed. Items were assigned to tests on an expert judgmental basis. The skill areas and tests which evolved were: (a) Mechanical (tools, mechanical systems, measurement and measuring instruments, stationary equipment operation, vehicular operation, connections and fittings, and fluid systems), (b) Electrical (electricity), (c) Spatial (layout and visualization, and structures), (d) Chemical-Biological (materials, chemicals, foods and cooking, biological systems, and medical and first aid), (e) Symbolic (arithmetic conventions and clerical), and (f) People (human relations, sales, situation dealing, service, etiquette, style, and grooming). The data on area scores and test scores revealed stronger relationships for similar types of scales than those not so similar. This may suggest a relatively well-structured domain of general vocational capabilities as defined by these tests. However, the skills identified were specific occupational tasks and did not necessarily reflect those basic skills, such as, math, reading, and attitudes that are required to function in many vocational training programs (Greenan & Smith, 1981).

Mecham and McCormick (1969) developed a list of 68 attributes relating to occupational requirements. They included: (a) 41 attributes of an "aptitude" nature (e.g., verbal comprehension, arithmetic reasoning, manual dexterity), and (b) 27 attributes of an interest or temperament nature, as characterized by different types of job situations to which people must adjust (e.g., processes/machines/techniques, dealing with people, working under specific instructions). Marquardt and McCormick (1972) added 8 attributes to this list which included: (a) ideational fluency, (b) originality, (c) problem sensitivity, (d) spatial orientation, (e) reflective attention, (f) time sharing, (g) stamina, and (h) speed of limb movement.

The Ergometrics Project identified several skills that were transferable across occupations (Cunningham, 1971). The basic concept of the project included the ideas originally developed by Fine and Heinz (1958), Guilford (1966), McCormack, Cunningham, and Thornton (1967), and Altman (1968). Ergometrics uses the principles of psychometric concepts and techniques to the study of work (Cunningham, Tuttle, Floyd, & Bates, 1971). Work elements (work activities or conditions) and worker attributes (abilities and personality traits) are inherent in the project (Cunningham, 1971). The project produced instrumentation and methods for evaluating jobs in relation to their work elements and attribute requirements. A correspondence between the two are desirable to enable jobs to be described in terms of work elements and attribute requirements. The Occupational Analysis Instrument (OAI) (Boese & Cunningham, 1975) was developed to evaluate occupations in relation to their work elements. The OAI contains 622 work elements which were tested on 1414 occupations. The Attribute Requirement Inventory (ARI) (Neeb, Cunningham, & Pass, 1971) was then developed to evaluate the attribute requirements of an occupation. The ARI contains 103 human attributes. Pass and Cunningham (1975) revealed the attribute requirements for each of the 62 work elements that were judged. The judges rated the level of relevance of an attribute to a work element on a 6-point scale. A rating of 0 indicated no relevance of an attribute to a work element and a rating of 6 was considered very relevant. The results of the present ongoing research concluded that only a vague and gross measure of generalizability exists across several occupations.

Taylor (1973) identified and measured 98 talents, human attributes, or inner process skills. He suggested a grouping of 6 categories of talents based upon world-of-work needs. Besides academic talent or ability, he emphasized five other "extremely important" types or broad groups of talents: (a) creative (or productive thinking) talent, (b) evaluative or decision-making talent, (c) planning talent, (d) forecasting talent, and (e) communication talent (p. 68).

Short, Dotts, Short, and Bradley (1974) identified several tasks and skills that seem to be part of a broad range of occupations: (a) legible handwriting on contact memos; (b) accurate, fast arithmetic calculations; (c) spelling of common nouns; (d) familiarity with job names in business, industry, and government; (e) ability to understand and interpret information presented by phone alone; (f) ability to communicate an attitude of interest and helpfulness [or other attributes] by voice alone; (g) ability to simultaneously perform several tasks (e.g., listening, writing, working mathematics problems); (h) ability to get accurate information from compact reference sources, such as, tables, charts, and graphs; (i) flexibility in changing work strategies under different supervisory and reward conditions; (j) apply rules to the classification of new examples; (k) apply multiple procedural rules in a classification task; (l) listening and talking to people; and (m) constructing learning aids and job aids to guide learning and job performance (p. 20-21).

Northcutt (1975) noted four primary skill areas that appeared to be involved in literacy and to account for the vast majority of requirements placed on adults: (a) communication skills (reading, writing, speaking, listening), (b) computation skills, (c) problem solving skills, and (d) interpersonal relations skills. These skills seem to be transferable in a wide range of jobs and occupations. The author recommended that special attention and effort should be directed at the identification, description, and teaching of those "often-required skills and knowledges."

Smith (1975), Kawula and Smith (1975), and Smith (1977) described a study to identify generic skills which are transferable across many occupations. Data were collected from approximately 10 employers in each of 77 nonprofessional occupational fields, representative of the world of work to determine those skills which were required within and across occupations. Thirty-one of the occupations contained supervisory tasks and were classified as supervisory occupations. The other 46 were classified as nonsupervisory occupations for which vocational programs commonly provide education and training.

The skill areas of mathematics, communications, interpersonal relations, and reasoning were included in the occupational survey. The manipulative skill areas were not studied. The project used the data, people, and things taxonomy of the Dictionary of Occupational Titles to classify skills. The skill areas of mathematics and communications included items in which workers dealt with data. The skill area of interpersonal relations included items in which workers dealt with people. The skill area of reasoning was a category by itself.

The 192 skill items identified to be common across occupations in the survey were categorized into two core skill clusters and 27 separate clusters. The two core clusters were supervisory and nonsupervisory occupations. For a skill item to be considered transferable it had to be in common with 75% of the occupations sampled. Those items which did not meet the criterion were clustered separately, 26 for the nonsupervisory and 3 for the supervisory occupations. The skill clusters were then organized in terms of a hierarchy based on the number of occupations that were represented in each skill which suggested some transferability.

The Generic Skills Project was a comprehensive research effort which provided the level of specificity of common skills not found in the DOT. The results of the project concluded that possessing the skills identified in the study would not guarantee occupational success but a lack of proficiency in the skill areas would be a serious detriment to occupational entry and success in many occupations.

Miguel (1977) examined several training and guidance programs relating to occupational, transferable skills. He identified five skill areas that are considered important in the work setting. Some skills related to transfer skills and others to job adaptation that included: (a) task performance skills common to occupations, (b) skills for applying broadly usable knowledge, (c) personal and interpersonal effectiveness skills, (d) self-analysis skills, and (e) career management and productivity skills. The skills for applying broadly usable knowledge seem similar to the familiar occupationally transferable skills. They included: (a) ability to know where and how to access needed information, (b) ability to commit knowledge to memory, (c) ability to recall information accurately, (d) ability to identify information needed for occupational tasks, (e) ability to use knowledge in decision making and problem solving, and (f) ability to create new knowledge as a result of synthesizing existing knowledge.

Wiant (1977) suggested a list of transferable skills identified by conference participants. The skill areas included: (a) intelligence, (b) aptitudinal, (c) interpersonal, and (d) attitudinal. Items within each skill area were listed in order of frequency. The list is potentially useful, however, the skills are not specific. Many of the items did not relate to problem solving abilities and appear to be traits or characteristics rather than skills. The skills may not be highly adaptable to vocational training programs and thus may not be transferable across programs (Greenan & Smith, 1981).

Howell (1977) identified 58 English competencies relating to communication skills including listening, speaking, verbal communication, job-related competencies, and writing. Administrators, vocational teachers, and English teachers in community colleges and technical institutes rated the importance of each competency for students preparing to enter trade-industrial occupations. Listening skills ranked highest.

Ashley and Ammerman (1978) identified 42 human attributes consisting of 24 general vocational capabilities, such as, tools, arithmetic computations, and dealing with social situations. In addition, they identified 18 cognitive competencies including form perception, verbal comprehension, and originality. The skills or tasks were selected from those used by Cunningham in the Occupation Analysis Inventory (Neeb, Cunningham, & Pass, 1971). Psychomotor and sensory abilities though included among Cunningham's list of attributes, were omitted to force rater attention to the more unusual descriptions of tasks in the skilled trades. A sample of

60 secondary vocational education instructors, university personnel, and research center staff who had related occupational work experience or knowledge in the 12 occupations investigated, generally perceived the skills to be important for success and transferable across the occupations studied.

Nelson (1979) identified several "Occupational Survival Skills" which relate primarily to the "human aspects" of working based on the perceptions of workers, students, parents, teachers, counselors, and administrators. The skills were perceived as important to be taught to students while they are enrolled in vocational/career education programs. The general occupational survival skills/topics identified included: (a) Working in Organizations, (b) Understanding Self, (c) Motivation for Work, (d) Interpersonal Relations, (e) Effective Communication, (f) Using Creativity at Work, (g) Problem Solving, (h) Authority and Responsibility, (i) Leadership, (j) Coping with Conflict, (k) Coping With Change, and (l) Adapting and Planning for the Future. The specific skills identified provide an important component area for student skill identification and assessment and determining instructional needs.

Ashley, Cellini, Faddis, Pearsol, Wiant, and Wright (1980) identified five skill areas or "aspects" where adaptation to work would be required and included: (a) organizational aspects, (b) performance aspects, (c) interpersonal aspects, (d) responsibility aspects, and (e) affective aspects. A 50-item instrument was constructed to measure an individual's degree of adaptation to each of the five aspects of work. The instrument contained declarative statements reflecting adaptation in each of these aspects to the subjects who responded by indicating agreement or disagreement.

Selz (1980), Selz and Coleman (1980), and Selz, Jones, and Ashley (1980) identified through the literature a list of 40 consumer economics skills which included three sets of skills: (a) consumer power, (b) money management, and (c) consumer finance, and a list of 39 occupational adaptability skills, such as, have a good work attitude and manage one's own time and activities. A survey was conducted of the general adult public using the interview format. In the public's opinion, skills pertaining to consumer power, money management, and consumer finance were generally important and regarded as the shared responsibilities of the home, the school, and the self. Where these skills were actually learned, however, was not necessarily where the public perceived that they should be taught. For the most part, consumer economic competencies were perceived to be self-taught. The skills may be important to one's personal life (e.g., balance a checkbook, keep records on file, file income tax forms), but may have a questionable relationship to vocational training programs and work settings.

Greenan and Smith (1981) identified a list of skills which were potentially generalizable and related to success in postsecondary vocational training programs. A sample of male-dominated, female-dominated, and balanced programs (including auto mechanics, machinist, office occupations, interior design, and accounting), teachers, and students were selected for the study. The content validation process which included a comprehensive literature review and vocational teacher reviews of skills revealed a list of 4 skill areas. A total of 102 performance tasks were identified as potentially related to success in postsecondary vocational programs. The face validation process revealed that students and teachers understood the skills in terms of meaning, clarity, and readability. The skill areas and skills included: (a) 26 mathematics skills, (b) 30 communication skills, (c) 18 interpersonal relations skills, and (d) 28 reasoning skills. All teachers who participated in the study collectively rated 81 of the 102 skills across the 4 skills areas as being generalizable and important for students' success in their respective programs.

Summary

The concept of generalizable skills appears to be largely an unmet and important need with significant implications for what and how vocational education is provided in the future. Skills, knowledge, and attitudes involved in vocational training programs and employment settings are learned behaviors and are all potentially generalizable. However, no single, definitive, and agreed upon list exists, but there appears to be considerable consensus on many partial lists. Pratzner (1978) and Ashley and Ammerman (1978) claimed: (a) objective or non-arbitrary criteria do not seem to exist to decide whether one list is better or more valid than another, (b) items on many lists appear to be of equal importance, (c) several skills or attitudes somehow seem non-specific, vague, or reduced to a simple level of specificity, (d) the lists do not reflect adequately if at all the interrelationships, specificity, richness, and complexity of some skills and combinations of skills, and (e) it is very difficult to cross-reference items in several lists or to combine or consolidate lists. These claims seem substantiated in the present review of literature. In addition, the skills identified in most studies have been drawn from employment settings. Minimal research regarding generalizable skills has focused on vocational training programs or skill requirements of both vocational programs and occupations.

Transferable or generalizable skills include more than the "3 R's". However, although a considerable amount of research has been done to identify skills relating to specific occupations, only a few efforts have attempted to develop new clusters or groupings of occupations. In addition, several alternatives are available for examining individual careers, but minimal research has been done dealing with the ways that might improve our understanding of how skills and abilities are important (Pratzner, 1978).

Several research studies have reviewed, identified, analyzed, and summarized basic, transferable, or generalizable skills and have concluded that there are five categories of skill areas which appeared highly generalizable: (a) mathematics, (b) communications, (c) interpersonal relations, (d) reasoning, and (e) manipulative (Kawula & Smith, 1975; Sjogren, 1977; Greenan & Smith, 1981). These skill areas include but are not limited to problem solving, decision making, social skills of work (e.g., work habits, attitudes, and values), and technical skills. Similar skill areas and skills need to be specified and developed to high levels of mastery in students (Pratzner, 1981). Students need to be informed of the skills they have acquired and their level of proficiency, and those skills not acquired or not developed to higher levels of proficiency that are necessary for continued training and employment success. Miguel (1977) made several recommendations, some of which are significant for assisting students in developing generalizable skills: (a) strategies and procedures are needed for redesigning academic and vocational education curricula to provide for the development of transferable skills, (b) innovative instructional methods and techniques designed to develop transferable skills are needed, (c) reliable information is needed about skills required for training and occupations and skills developed by students so that greater interface of skills can be established, (d) students need planning, monitoring, and evaluation procedures and tools to inform them of the skills they are developing and relate those skills to a variety of occupational alternatives, and (e) assessment procedures and instruments are needed to assist school personnel and employers determine the transferability and level of students' and workers' skills.

Research Methods

Several research methods and procedures were used to achieve the major objectives and answer the research questions of this study. The procedures included: (a) instrument development, (b) identification and selection of the population, (c) data collection, and (d) data analysis. The research procedures occurred over a nine-month period between July 1, 1982 - March 31, 1983.

Instrumentation

A survey instrument was developed to collect the necessary data in this study. The first task was to identify a list of skills which were potentially generalizable and related to success in secondary vocational training programs. A comprehensive review of the literature was conducted regarding generalizable skills studies and research. The existing studies which developed lists of skills were reviewed, analyzed, and synthesized. A draft list of skills were identified and included four (4) skill areas and 102 skills: (a) 26 mathematics skills, (b) 30 communications skills, (c) 18 interpersonal relations skills, and (d) 28 reasoning skills. The draft list of skills was sent to the project advisory committee (PAC), survey research laboratory personnel at the University of Illinois, and a sample of 5 employers who operate a business (with more than 100 workers employed in several different occupations) and employees who work in an occupation for which training is provided in the program areas and programs in this study. All the reviewers were asked to respond to the list while at least considering the following questions:

(a) Should the skill domains be sub-divided? If yes, how?

(b) Do any of the skills need to be stated more specifically? Should examples be used? If yes, are the existing examples appropriate?

(c) Is each skill statement understandable, clear, and concise but complete?

(d) Is each skill written for student and teacher understanding?

(e) Does the list include all the generalizable skills that are potentially important and related to success in secondary vocational training programs?

Based on the reviewers' comments, additions, and/or deletions in terms of content, meaning, clarity, and readability, a final list of skills was produced which was potentially generalizable and related to success in secondary vocational training programs.

The second task in the instrument development process was to construct a survey questionnaire to assess the relative importance of the list of skills as it related to the content of secondary vocational training programs. The final list of skills was used to construct the Generalizable Skills Importance Questionnaire (GSIQ). The GSIQ was designed to survey teachers in order to assess the skills that are perceived as most necessary or important for their students to successfully perform in their respective vocational training programs. The purpose of this procedure was to identify a list of skills most common or generalizable within and across several secondary vocational training programs.

The draft GSIQ was sent to the PAC members and survey research laboratory personnel for review and critique. The reviewers were asked to respond to the GSIQ while at least considering the following questions:

a. Does the list of skills include all the generalizable skills which are potentially important and related to success in secondary vocational training programs?

b. Is the list of generalizable skills written clearly, understandable, and concise but complete?

c. Is the scale of measurement appropriate? Should the 'Importance' scale be 3 pt., 5 pt., 7 pt., or 10 pt.? Should the scale have a mid-point descriptor, such as "moderately important" or should it remain as is (i.e., semantic differential)?

d. What should be the criterion for generalizability (e.g., 50%, 75%, 90% [see project proposal])? How could the criterion for generalizability be best determined? For example, should it be based on an average 75% (e.g., 3.75 on a 5 pt. scale) response for all teachers on any given item, or 75% of all responding teachers at a 75% average response on any given item.

e. Is the GSIQ instrument written clearly, and is it understandable?

f. Overall, is the GSIQ instrument design and format appropriate in terms of its intended purpose, and how may it be improved?

The GSIQ was also field-tested on a sample of ten (10) AVC directors and teachers. Based on all the reviewers' comments, additions, and/or deletions in terms of content, meaning, clarity, and readability, the final version of the GSIQ was produced (see Appendix A). The GSIQ included four (4) skill areas and 115 skills: (a) 21 mathematics skills, (b) 27 communications skills, (c) 20 interpersonal relations skills, and (d) 40 reasoning skills. Each skill area contained four spaces for teachers to identify and rate additional skills not included on the instrument. An additional four spaces were included at the end of the GSIQ for teachers to identify skill areas/skills (i.e., skill areas other than mathematics, communications, interpersonal relations, reasoning, or vocational/occupational/technical skills specific to programs) not included in the GSIQ. The GSIQ included directions and an example for completing the survey, and asked teachers to provide their (a) area vocational center, (b) name, (c) vocational program area, and (d) vocational training program. The GSIQ contained a seven-point Likert-type scale based on "degree of importance" using not important, moderately important, and very important as scale anchors. The GSIQ also included a computer code for programming, keypunching, data processing, and data analysis purposes.

Population

The population for this study consisted of the 593 secondary vocational training teachers in the thirty-two (32) area vocational centers in the State of Illinois. All teachers in each of the five (5) vocational training program areas were chosen to participate and included: (a) agricultural occupations; (b) business, marketing, and management occupations; (c) health occupations; (d) home economics occupations; and (e) industrial occupations.

Data Collection

Information regarding the types and number of vocational training program areas, programs, and numbers of teachers were collected from the 32 secondary area vocational center directors. During the fourth week of October, 1982, each of the AVC directors received a cover letter; a GSIQ for each teacher in his center; instructions for distributing, collecting, and returning the GSIQ's; and a self-addressed mailing envelope for returning the completed GSIQs. The directors were instructed to distribute a GSIQ to each teacher, collect the GSIQs, and return the completed GSIQs by the third week of November, 1982. At that time, a follow-up telephone call was made to each non-responding director. The data collection process was concluded during the third week of December, 1982. Each of the 32 (100%) AVC directors returned a package of completed GSIQs. Four hundred and eighty-nine (489) or 82.46% of the total number of 593 AVC teachers across the vocational training program areas and programs completed GSIQs, and each GSIQ was usable. Table 1 illustrates the vocational training program areas and numbers of teachers who participated in the study. The data collection process occurred over a two-month period.

Table 1

Vocational Training Program Areas and Numbers of Teachers Who Participated in the Study

	Vocational Training Program Area					
	Agricultural Occupations	Business, Marketing, and Management Occupations	Health Occupations	Home Economics Occupations	Industrial Occupations	All Vocational Training Program Areas
Total Number of AVC Teachers	39	111	57	61	325	593
Number of Participating AVC Teachers (i.e., teachers returning GSIQs)	31	95	43	54	266	489
Percent Response	79.49%	85.59%	75.44%	88.53%	81.85%	82.46%

N = 593
n = 489

Data Analysis

The data obtained from the GSIQs were analyzed individually and collectively by program area, program, skill area, and skill. Descriptive statistics were used to analyze, explain, and discuss the data. Means, standard deviations, sample sizes, and reliability coefficients (internal consistency reliability - Cronbach's Coefficient Alpha) were computed using the Statistical Packages for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975).

The reliability of the GSIQ was determined in terms of internal consistency reliability. Internal consistency reliability generally refers to the consistency or homogeneity of performance over all items on an instrument or scale within an instrument (Nunnally, 1978). The coefficient of internal consistency indicates the degree to which items intercorrelate. Thus, the higher the coefficient of internal consistency, the greater is the instrument's capability of consistently and accurately measuring the trait(s) which it intends to measure. The rationale for these analyses suggested that if the teachers were rating the skills accurately and consistently, there should be high internal consistency reliability coefficients for the Generalizable Skills Importance Questionnaire within and across the vocational training program areas/programs. Cronbach's Coefficient Alpha (Cronbach, 1971) which is based on the average correlation among items within an instrument was used to estimate the internal consistency of the GSIQ. Internal consistency reliability coefficients of .80 or greater for measuring instruments are usually considered adequate (Nunnally, 1978). Therefore, for this study, an individual skill area or total instrument coefficient of .80 or larger was considered adequate and acceptable.

The GSIQ provided descriptive data regarding the relative importance of a list of skills, as perceived by teachers, in terms of being necessary for students to successfully perform in the vocational training programs in which they were enrolled. The teachers' responses from the seven-point importance scale were collectively translated into three (3) levels of skill generalizability and need that included: (a) low, 1.00-2.99, (b) medium, 3.00-5.00, and (c) high, 5.01-7.00. Thus, the levels of skill generalizability and importance/need were identified and described within and across program areas, programs, skills areas, and skills.

Findings

The major problem of this study was to determine the skill areas and skills which were generalizable within and across secondary vocational training programs. The data that were collected focused on the objectives and research questions developed for this study.

Instrument Development and Validity

Objective 1: Identify and validate a list of skills which is potentially generalizable and related to success in secondary vocational training programs.

The procedural plan for identifying and validating the list of generalizable skills was described in detail in the research methods section and included the following components: (a) review of the literature, (b) identification of an item pool, (c) analysis and synthesis of items from the pool, and (d) review and evaluation of items.

A comprehensive review of the literature was conducted to identify skills that were developed in previous research studies. An initial draft list was developed that included four (4) skill areas and 102 skills: (a) 26 mathematics skills, (b) 30 communications skills, (c) 18 interpersonal relations skills, and (d) 28 reasoning skills. In addition, science skills were reviewed and summarized. However, while the available literature and research concluded that science skills and knowledge possessed relatively low generalizability for several occupations (Hatton & Smith, 1977; Smith, 1977), some vocational programs and occupations require high levels of science skills/ knowledge. Therefore, the importance/need of science skills/knowledge apparently tends to be specific to vocational programs and occupations. For example, biology skills and knowledge may be often important in agricultural programs (e.g., ornamental horticulture) or health occupations programs (e.g., practical nursing), chemistry may be frequently required for home economics programs (e.g., food management, production, and service), and physics skills and knowledge are sometimes critical in industrial programs (e.g., auto mechanics). As high or advanced technology (which applies basic and advanced science skills/ knowledge) becomes more prevalent in education/training/employment settings, the importance and generalizability of science skills and knowledge are likely to increase. Appendix B lists numerous science skills and knowledge areas identified in the literature as being important but not necessarily generalizable within or across several occupations. However, this list can serve as a basis for conducting future inquiry regarding the importance and generalizability of science skills/knowledge in vocational programs and occupations.

The draft list of potential generalizable skills was reviewed by the project advisory committee, survey research laboratory personnel, and a sample of employers/employees. Based on the reviewers' comments, additions, and/or deletions in terms of content, meaning, clarity, and readability, a final list of skills was produced which was (a) perceived to possess both content and face validity, and (b) potentially generalizable and related to success in secondary vocational training programs.

In summary, the process for identifying the list of generalizable skills was based on a logical plan that included a comprehensive review of the literature, identification of an item pool, analysis and synthesis of items from the pool, and reviews and evaluations of the list by a panel of experts.

Objective 2: Construct a survey questionnaire to assess the relative importance of a list of skills as it relates to the content of secondary vocational training programs.

The instrument construction process was described in detail in the research methods section and included the following components: (a) selection of the identified list of generalizable skills, (b) development of an appropriate scale for the intended purpose, (c) writing and scaling the items, and (d) writing directions for using the instrument.

The previously identified list of generalizable skills was used as the basis for writing items and constructing the "Generalizable Skills Importance Questionnaire (GSIQ)." The GSIQ which contained a seven-point Likert-Type scale based on "degree of importance," was designed to survey secondary vocational training teachers in order to determine the skills that were perceived as most necessary or important for success for students to successfully perform in their respective programs. The GSIQ was also intended to identify skills that were generalizable within and across several secondary vocational training program areas and programs.

The project advisory committee members, survey research laboratory personnel at the University of Illinois, and a sample of ten (10) AVC directors and teachers reviewed and critiqued the GSIQ. The purpose of this procedure was to (a) identify additional skills, and (b) determine whether the reviewers understood the directions and items in terms of content, meaning, clarity, and readability. Based on the reviewers comments, additions, and/or deletions the necessary revisions were made. The final version of the GSIQ was then produced and was perceived to possess both content and face validity, and was potentially capable of reliably measuring the importance of generalizable skills relative to success in secondary vocational training programs.

In summary, the GSIQ instrument construction process was based on a logical plan including the selection of the identified list of generalizable skills, development of an appropriate scale for the intended purpose, writing and scaling the items, and writing directions for using the instrument.

Reliability

Objective 3: Determine the reliability of the Generalizable Skills Importance Questionnaire in terms of internal consistency reliability.

The internal consistency reliability coefficients of the GSIQ skill areas for each of the program areas are presented in Table 2. The coefficients for the GSIQ ranged from .90 to .98. These values suggested that the GSIQ skill areas and items, individually and collectively, were very highly accurate and consistent measures of skill importance and generalizability. All coefficients were well above .80 and therefore considered adequate and acceptable. The findings suggested that the GSIQ mathematics, communications, interpersonal relations, and reasoning skill areas and skills were highly reliable measures of generalizable skills within and across secondary agricultural; business, marketing, and management; health; home economics, and industrial occupations training programs.

Skills Identification

Objective 4: Identify the skill areas and skills that are generalizable within and across secondary vocational training program areas and programs.

The skill areas and skills identified to be generalizable within and across secondary vocational training programs are presented in Table 3. Program areas and programs are listed across the top of the Table. Skill areas and skills are listed down the left-column of the Table. The color code indicates the level of importance and generalizability for each skill within and across program areas/programs: High ($\bar{x}$=5.01-7.00), Medium

Table 2

Internal Consistency Reliability Coefficients (Cronbach's Alpha) of the Generalizable Skills Importance Questionnaire Within and Across Each of the Vocational Training Program Areas

Skill Area	Vocational Training Program Area					
	Agricultural Occupations	Business, Marketing, and Management Occupations	Health Occupations	Home Economics Occupations	Industrial Occupations	All Program Areas
Mathematics	.96 n=39	.96 n=116	.98 n=50	.98 n=56	.95 n=269	.96 n=530
Communications	.96 n=32	.97 n=125	.96 n=53	.96 n=62	.96 n=275	.96 n=547
Interpersonal Relations	.91 n=38	.95 n=131	.90 n=54	.92 n=64	.94 n=293	.94 n=580
Reasoning	.96 n=36	.97 n=117	.97 n=50	.97 n=59	.97 n=277	.97 n=539
All Skill Areas	.98 n=26	.98 n=99	.98 n=43	.98 n=46	.98 n=219	.98 n=433

note: n = for the particular scale or total instrument, the number of programs/teachers (i.e., teachers who taught in more than one program) who answered each item on the scale or total instrument.

($\bar{x}$=3.00-5.00), and Low ($\bar{x}$=1.00-2.99). The means or averages ($\bar{x}$), standard deviations (s.d.), and sample sizes (n) corresponding to the cells in Table 3 are presented in Appendix C.

A review of the descriptive statistics in Appendix C relates that the standard deviations generally range from .50-2.75 as measured by the responses to the seven-point Likert-type scale. The larger standard deviations, for example, those which are greater than 2.00 may suggest moderate disagreement among the ratings. In part, this can be explained by the varying sample sizes. For instance, some programs may have only two teachers, therefore, the chance for disagreement is relatively high. Standard deviations tend to decrease and stabilize as the sample size increases or remains large (e.g., n=25). It should also be noted that some programs had only one teacher, or at least only one teacher completed the ratings for some programs. In such cases, no standard deviations could exist. Disagreements on ratings similar to those used in this study can be expected. The data reflect real differences among teachers, but such differences should be considered when analyzing and interpreting the data.

In summary, it would be helpful to review Appendix C while analyzing and interpreting Table 3 since Appendix C reflects average ratings and it provides insight into the variation of ratings. The following discussion provides a synopsis of the findings by program area and across program areas.

Agricultural Occupations Programs

The levels of skill generalizability within and across agricultural occupations programs as measured by mean score ratings are presented in Table 3. Collectively, the teachers in the agricultural programs, for the most part, rated the mathematics, communications, interpersonal relations, and reasoning skills as being very important (5.01-7.00) for success in their programs. The findings also suggested that a high degree of skill generalizability (5.01-7.00) exists across agricultural programs. There was only one case in which a reasoning skill was rated not important (1.00-2.99) in a particular program. Several individual programs rated particular skills as having only moderate importance, and thus, medium generalizability. This was commonly the case for reasoning skills (4-13, 15, 16, 28, and 40), several communications skills (2, 4-6, 8, 9, 18, 21, 23, 24, 26, 27) and some mathematics skills (8, 9, 18, 24, 25).

In summary, 24 of 28 mathematics skills, 16 of 27 communications skills, 19 of 20 interpersonal relations skills, and 32 of 40 reasoning skills were found to have a high degree of importance for success and generalizability across secondary agricultural occupations training programs. The remainder of the skills are at least moderately important and possess medium generalizability across programs. In addition, some of the agricultural teachers listed additional skills in the spaces provided in the GSIQ. However, the skills listed were either already included in the GSIQ, skills similar to those in the GSIQ, and/or occupational/technical skills specific to individual programs.

Business, Marketing, and Management Occupations Programs

The vast majority of mathematics, communications, interpersonal relations, and reasoning skills were rated as being very important by the business, marketing, and management occupations teachers. The skills were typically generalizable within and across programs. There were nineteen (19) cases where skills were rated in the not important range for success in individual programs. Most of these cases involved mathematics skills 24 and 25 and reasoning skills 28 and 29. Several skills were found to be moderately important and have medium generalizability for individual programs. This was particularly true for mathematics skills (9,22-26) and reasoning skills (6, 9, 11-13, 16, 23, 27-30).

In summary, 23 of 28 mathematics skills, 27 of 27 communications skills, 20 of 20 interpersonal relations skills, and 30 of 40 reasoning skills were rated by all the business, marketing, and management occupations teachers as being very important for success and highly generalizable across these programs. The balance of the skills are at least moderately important and generalizable across the program area. The teachers also listed several skills in the GSIQ. In many cases, skills listed were repetitious, very similar to skills in the GSIQ, or occupationally specific skills of a technical nature. However, several additional skills were listed for individual programs which teachers cited as being important. These programs and skills included:

Mathematics

Program	Skill
Advertising Services General Merchandise (Sales)	• Calculate discounts and use them in problems
Business Data Processing Systems Computer Programming	• Use of base 2 and 16 arithmetic • Understand algebraic concepts • Provide proof of results obtained
Secretarial	• Use touch-method of using calculator • Accuracy and speed in using calculator
Office Occupations	• Verify answers

Communications

Program	Skill
Advertising Services General Merchandise (Sales)	• Handle telephone instructions • Place purchase orders over the telephone
Business Data Processing Systems Computer Programming	• Work in a highly structured environment
Secretarial Office Occupations	• Proofreading • Use correct punctuation • Spelling • Understand and use common business terms

Interpersonal Relations

Program	Skill
Advertising Services General Merchandise (Sales)	• Work with others of different ability levels
Secretarial Word Processing Office Occupations	• Emphasize productivity and quality
Office Occupations	• Good daily grooming habits and cleanliness
Secretarial	• Practice good manners • Maintain professional appearance and dress

Reasoning

Program	Skills
Business Data Processing Systems Computer Programming	• Perform with a great deal of detail
Secretarial	• Determine the best way to correct work that has errors

Other Skills

Program	Skill
Advertising Services General Merchandise (Sales)	• Coordinate eye and hand motions

Business Data Processing Systems Secretarial Office Occupations Computer Programming	• Type with speed and accuracy
Secretarial	• Keyboarding • Use a dictaphone • Shorthand
Office Occupations	• Use modern office machines • Understand and use accounting or bookkeeping terms • Computer literacy • File communications • Use of data entry equipment
Computer Programming	• Accounting • Recordkeeping

Health Occupations Programs

The health occupations teachers generally rated the communications, interpersonal relations, and reasoning skills as being very important for success in programs. Overall, the mathematics skills tended to be moderately important and have medium generalizability within and across programs. In 14 instances several mathematics skills were rated for individual programs as not important and thus having low generalizability within programs. Some communications skills (18), interpersonal relations skills (14), and reasoning skills (1, 13, 15, 16, 27-29) were rated as moderately important by the teachers.

In summary, 8 of 28 mathematics skills, 25 of 27 communication skills, 19 of 20 interpersonal relations skills, and 34 of 40 reasoning skills were rated by all the health occupations teachers as being very important for success and highly generalizable across these programs. Mathematics skills tended to be moderately important and have medium generalizability and in several cases some mathematics skills were not important in programs. The teachers also listed some additional skills in the GSIQ that have importance to specific programs:

Mathematics

Program	Skill
Practical Nursing	• Read a centigrade thermometer and convert to Fahrenheit • Solve word problems using measurements based on Apothecaries and household measurements • Solve ratio and proportion problems • Use complex metrics and apothecaries systems

Communications

Program	Skill
Health Occupations Cooperative Education	• Understand and use medical terms

Interpersonal

Program	Skill
Medical Assisting Practical Nursing	• Be empathetic • Be patient • Be honest

Other Skills

Program	Skill
Practical Nursing Medical Assisting	• Manual dexterity • Typing

Home Economics Programs

The communications, interpersonal relations, and reasoning skills were, for the most part, rated very important by the teachers and were therefore considered highly generalizable within and across programs. The mathematics skills were rated moderately important for success in most individual programs. In 13 cases several mathematics skills were rated for individual programs as not important, and therefore having low generalizability within those programs. Most of the remaining mathematics skills were found to be moderately important and have medium generalizability. In addition, several communications skills (4-6, 8, 14, 18, 19), interpersonal relatons skills (14), and reasoning skills (5, 7-13, 18, 21, 23, 28, 29, 40) have medium generalizability and importance within and across programs.

In summary, 7 of 28 mathematics skills, 26 of 27 communications skills, 20 of 20 interpersonal relations skills, and 33 of 40 reasoning skills were rated by the home economics occupations teachers as being very important for success and highly generalizable across programs. Mathematics skills were, overall, considered moderately important and having medium generalizability, and rated in the not important range for some programs. The home economics teachers also listed additional skills that were perceived as important in some programs:

Communications

Program	Skill
Child Care	• Use proper word tense

Interpersonal Relations

Program	Skill
Child Care	• Be well groomed

Other Skills

Program	Skill
Child Care	• Have a positive attitude
Home Economics Cooperative Education	• Stay alert

Food Management, Production, and Service	• Dress appropriately • Have good personal hygiene • Use sanitary work methods • Fine and gross motor skills
Clothing Management, Production, and Service Interior Decorating	• Manual dexterity • Eye-hand coordination • Coordinate colors, textures, shapes, and lines

Industrial Occupations Programs

Overall, the mathematics, interpersonal relations, and reasoning skills were rated in the very important range for students' success in industrial occupations programs, and were therefore considered highly generalizable within and across programs. The communications skills were rated moderately important in most programs. Some individual mathematics (29 cases), communications (27), interpersonal relations (9), and reasoning (25) skills were rated in the not important range for several programs, and therefore were considered to have low generalizability within those programs. Several mathematics (15, 20, 21, 24-27), communications (1, 2, 4-9, 16, 18, 19, 21, 23, 24, 26, 27), interpersonal relations (14, 16, 19, 20), and reasoning (5-13, 15, 16, 21, 23, 28) skills were considered to have moderate importance and medium generalizability across programs.

In summary, 22 of 28 mathematics skills, 11 of 27 communications skills, 17 of 20 interpersonal relations skills, and 27 of 40 reasoning skills were rated very important for success and highly transferable across industrial occupations programs. The remaining skills possessed medium generalizability across programs. The communications skills were, for the most part, considered moderately important for success in programs. In addition, several additional skills were listed by the teachers and were considered important:

Mathematics

Program	Skill
Air Conditioning Heating Refrigeration Electronics Occupations Machine Shop Tool and Die Making	• Use basic trigonometric functions
Auto Mechanics	• Apply degrees of rotation to a graph
Commercial Art	• Enlarge or reduce proportional sizes
Diesel Mechanics	• Convert pounds to foot pounds and foot pounds to pounds
Electrical Occupations	• Find square root
Electronics Occupations	• Use binary math • Use scientific notation • Use algebraic equations and formulas for solving unknowns • Use a measuring device to measure electronic quantities
Air Conditioning Combine Metal Trades Machine Shop Welding	• Use basic geometry (e.g., area, circumference, volume)
Machine Shop Tool and Die Making Industrial Electrician Electronics Occupations Electrical Occupations	• Use algebra
Electronics Occupations Electrical Occupations	• Check answers for accuracy • Find formulas to solve problems

Communications

Program	Skill
Communications and Media Specialist Commercial Art	• Translate ideas into A/V forms

Auto Mechanics Diesel Mechanics Electronics Occupations Machine Shop	• Understand and use technical terms • Read schematic drawings

Interpersonal Relations

Program	Skill
Electronics Occupations	• Good personal hygiene

Reasoning

Program	Skill
Electronics Occupations	• Maintain orderly work area

Other Skills

Program	Skill
Communication and Media Specialist Combine Metal Trades Commercial Art Auto Mechanics Construction and Building Trades Electronics Occupations Body and Fender Repair Electrical Occupations Machine Shop Welding Millwork and Cabinetmaking Tool and Die Making	• Technical equipment operation • Eye-hand coordination • Performance skills and techniques • Motor skills • Manipulative skills • Business skills (bookkeeping, accounting, management, investment and finance, office and clerical procedures, and sales) • Manual dexterity
Commercial Art	• Perseverance
Electrical Occupations Electronics Occupations	• Typing
Commercial Art Construction and Building Trades Drafting Communications and Media Specialist	• Visual perception (e.g., 3-D objects) • Spatial concepts
Construction and Building Trades Machine Shop Welding	• Physical fitness and ability to lift and carry 100 pounds • Ability to climb • No fear of heights

Construction and Building Trades Machine Shop Graphic Arts	• Good attitude
Construction and Building Trades	• Able and willing to work in less than ideal conditions • Enjoy working outside
Machine Shop Tool and Die Making	• Quick reactions to stressful situations • Very good eye-sight (corrected) • Be able to stand up on hard surfaces for lengthy periods • Depth perception
Electrical Occupations	• Work in organized manner
Drafting	• Computer knowledge
Graphic Arts	• Attention span
Body and Fender Repair	• Patience
Welding	• Safety consciousness and demonstrate safe working practices and procedures
Communications and Media Specialist	• Aesthetics • Composition

All Secondary Vocational Training Areas and Programs

The extreme right column in Table 3 provides information relating to skill generalizability for all vocational training areas and programs. Twenty-one of the 28 mathematics skills, 20 of 27 communications skills, 20 of 20 interpersonal relations skills, and 27 of 40 reasoning skills are very important for success and have a high degree of generalizability across all secondary agricultural; business, marketing, and management; health; home economics; and industrial occupations training programs. The remaining skills have at least moderate importance and medium generalizability. There appears to be a core of skills which are basic to, important or necessary for success in, and generalizable across secondary vocational training areas and programs.

TABLE 3

Generalizability of Mathematics, Communications, Interpersonal Relations, and Reasoning Skills in Secondary Agricultural; Business, Marketing, and Management; Health; Home Economics; and Industrial Occupations Training Programs.

KEY

■ - High Generalizability ($\bar{x}$ = 5.01 - 7.00)

▨ - Medium Generalizability ($\bar{x}$ = 3.00 - 5.00)

☐ - Low Generalizability ($\bar{x}$ = 1.00 - 2.99)

Mathematics Skills

Whole Numbers

1. Read, write, and count single and multiple digit whole numbers
2. Add and subtract single and multiple digit whole numbers
3. Multiply and divide single and multiple digit whole numbers
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers
5. Round off single and multiple digit whole numbers

Fractions

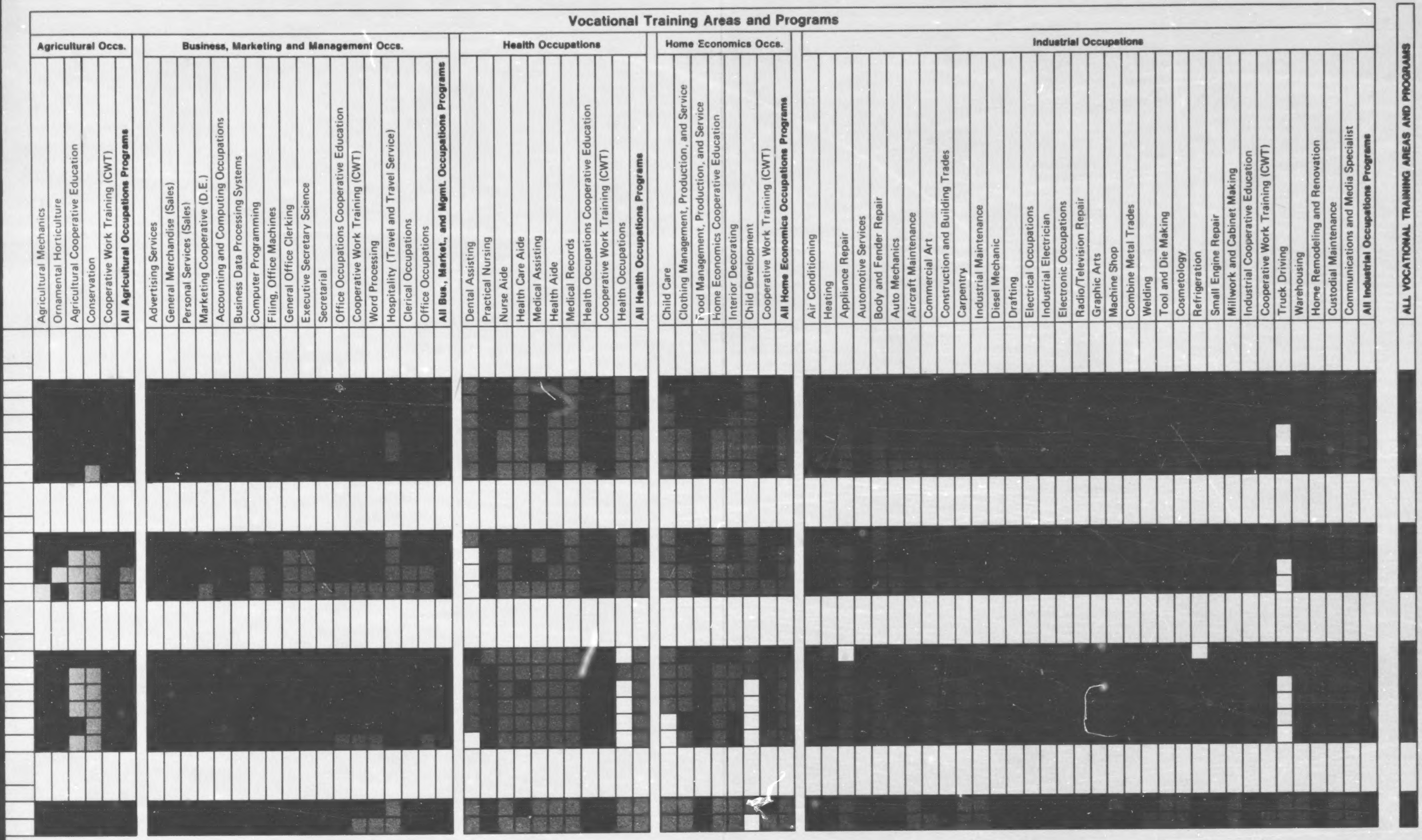
6. Read and write common fractions
7. Add and subtract common fractions
8. Multiply and divide common fractions
9. Solve word problems with common fractions

Decimals

10. Carry out arithmetic computations involving dollars and cents
11. Read and write decimals in one and more places
12. Round off decimals to one or more places
13. Multiply and divide decimals in one or more places
14. Add and subtract decimals in one or more places
15. Solve word problems with decimals in one or more places

Percent

16. Read and write percents
17. Compute percents



Vocational Training Areas and Programs

Agricultural Occs.
- Agricultural Mechanics
- Ornamental Horticulture
- Agricultural Cooperative Education
- Conservation
- Cooperative Work Training (CWT)
- **All Agricultural Occupations Programs**

Business, Marketing and Management Occs.
- Advertising Services
- General Merchandise (Sales)
- Personal Services (Sales)
- Marketing Cooperative (D.E.)
- Accounting and Computing Occupations
- Business Data Processing Systems
- Computer Programming
- Filing, Office Machines
- General Office Clerking
- Executive Secretary Science
- Secretarial
- Office Occupations Cooperative Education
- Cooperative Work Training (CWT)
- Word Processing
- Hospitality (Travel and Travel Service)
- Clerical Occupations
- Office Occupations
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Health Occupations
- Dental Assisting
- Practical Nursing
- Nurse Aide
- Health Care Aide
- Medical Assisting
- Health Aide
- Medical Records
- Health Occupations Cooperative Education
- Cooperative Work Training (CWT)
- Health Occupations
- **All Health Occupations Programs**

Home Economics Occs.
- Child Care
- Clothing Management, Production, and Service
- Food Management, Production, and Service
- Home Economics Cooperative Education
- Interior Decorating
- Child Development
- Cooperative Work Training (CWT)
- **All Home Economics Occupations Programs**

Industrial Occupations
- Air Conditioning
- Heating
- Appliance Repair
- Automotive Services
- Body and Fender Repair
- Auto Mechanics
- Aircraft Maintenance
- Commercial Art
- Construction and Building Trades
- Carpentry
- Industrial Maintenance
- Diesel Mechanic
- Drafting
- Electrical Occupations
- Industrial Electrician
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- Welding
- Tool and Die Making
- Cosmetology
- Refrigeration
- Small Engine Repair
- Millwork and Cabinet Making
- Industrial Cooperative Education
- Cooperative Work Training (CWT)
- Truck Driving
- Warehousing
- Home Remodeling and Renovation
- Custodial Maintenance
- Communications and Media Specialist
- **All Industrial Occupations Programs**

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Mixed Operations

18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers
19. Solve word problems by selecting and using correct order of operations
20. Perform written calculations quickly
21. Compute averages

Measurement and Calculation

22. Read numbers or symbols from time, weight, distance, and volume measuring scales
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units
24. Use a measuring device to determine an object's weight, distance, or volume in metric units
25. Perform basic metric conversions involving weight, distance, and volume
26. Solve problems involving time, weight, distance, and volume
27. Use a calculator to perform basic arithmetic operations to solve problems

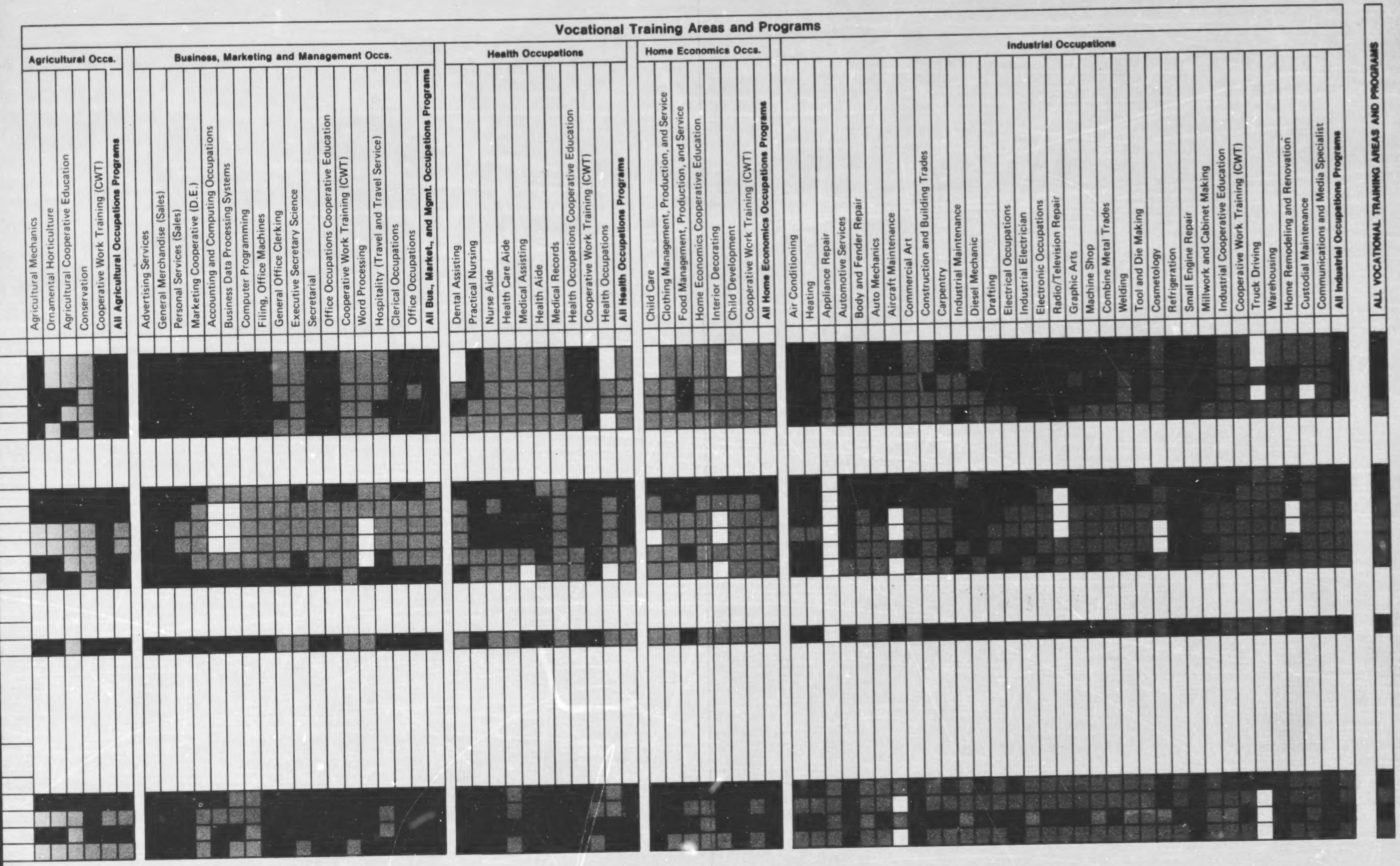
Estimation

28. Determine if a solution to a mathematical problem is reasonable

Communications Skills

Words and Meanings

1. Use plural words appropriately in writing and speaking
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking
3. Use appropriate abbreviations of words in writing and speaking
4. Use words appropriately which mean the same as other words but are spelled differently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Warehousing
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ALL VOCATIONAL TRAINING AREAS AND PROGRAMS

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5. Use words correctly which sound the same as other words but that have different meanings and spellings
6. Use words appropriately which are opposite of one another
7. Use appropriate word choices in writing and speaking
8. Add appropriate beginnings and endings to words to change their meaning
9. Punctuate one's own correspondence, directives, or reports

Reading

10. Read, understand, and find information or gather data from books, manuals, directories, or other documents
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read
12. Read and understand forms
13. Read and understand short notes, memos, and letters
14. Read and understand graphs, charts, and tables to obtain factual information
15. Understand the meanings of words in sentences
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls

Writing

18. Review and edit other's correspondence, directives, or reports
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms

Speaking

21. Speak fluently with individuals or groups
22. Pronounce words correctly
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures

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- Body and Fender Repair
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- Aircraft Maintenance
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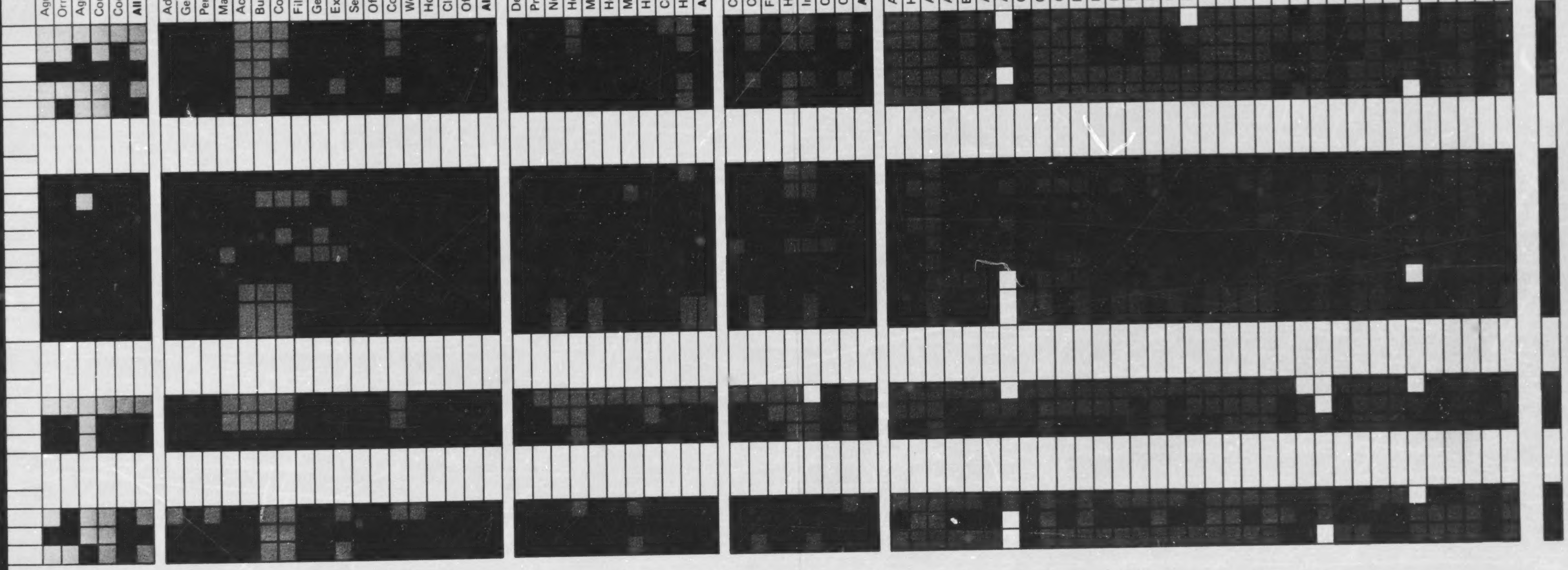
ALL VOCATIONAL TRAINING AREAS AND PROGRAMS



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Listening

24. Restate or paraphrase a conversation to confirm one's own understanding of what was said
25. Ask appropriate questions to clarify another's written or oral communications
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations
27. Take accurate notes which summarize the material presented from spoken conversations

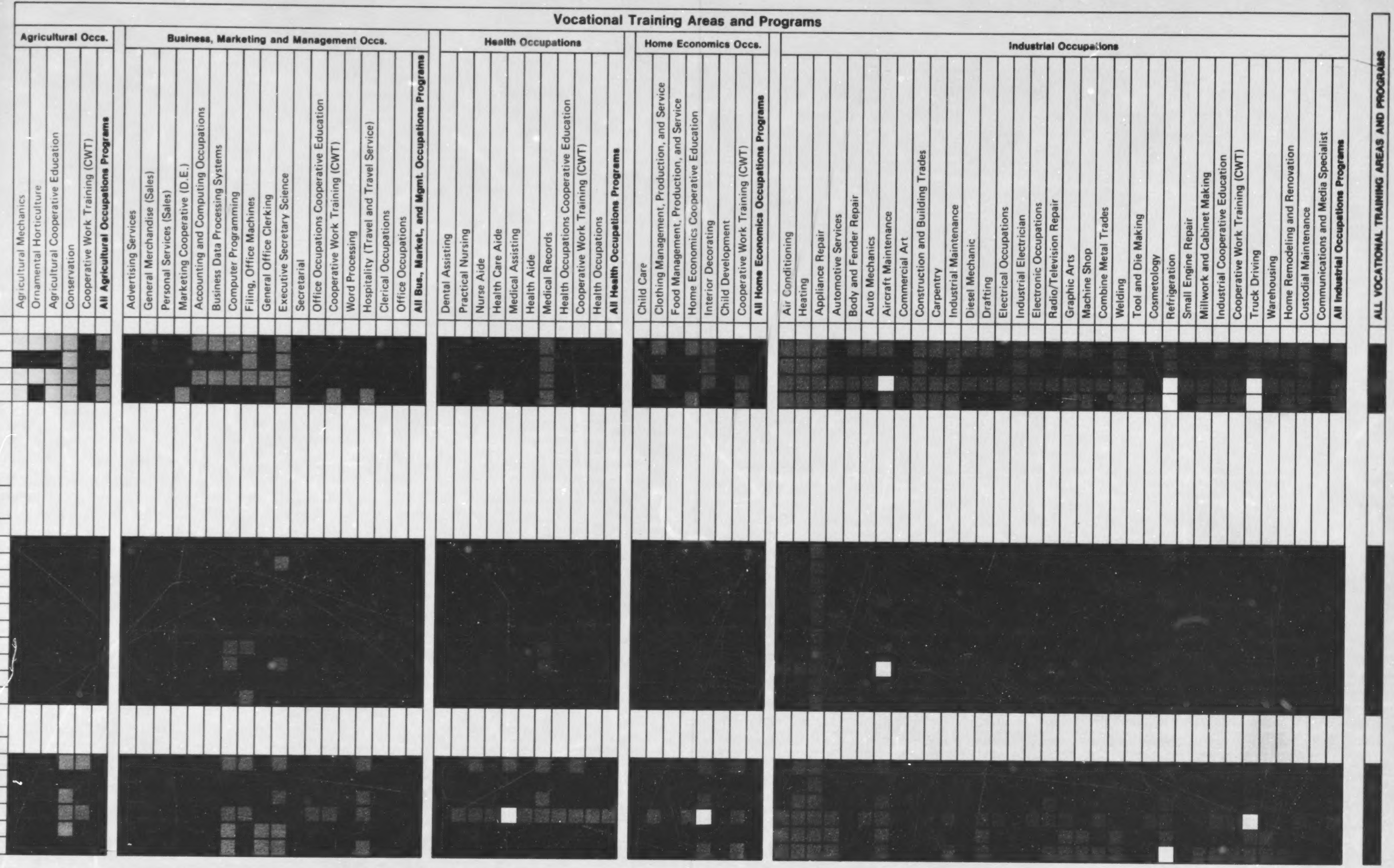
Interpersonal Relations Skills

Work Behaviors

1. Work effectively under different kinds of supervision
2. Work without the need for close supervision
3. Work cooperatively as a member of a team
4. Get along and work effectively with people of different personalities
5. Show up regularly and on time for activities and appointments
6. Work effectively when time, tension, or pressure, are critical factors for successful performance
7. See things from another's point of view
8. Engage appropriately in social interaction and situations
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions
10. Plan, carry out, and complete activities at one's own initiation

Instructional and Supervisory Conversations

11. Instruct or direct someone in the performance of a specific task
12. Follow instructions or directions in the performance of a specific task
13. Demonstrate to someone how to perform a specific task
14. Assign others to carry out specific tasks
15. Speak with others in a relaxed and self-confident manner
16. Compliment and provide constructive feedback to others at appropriate times



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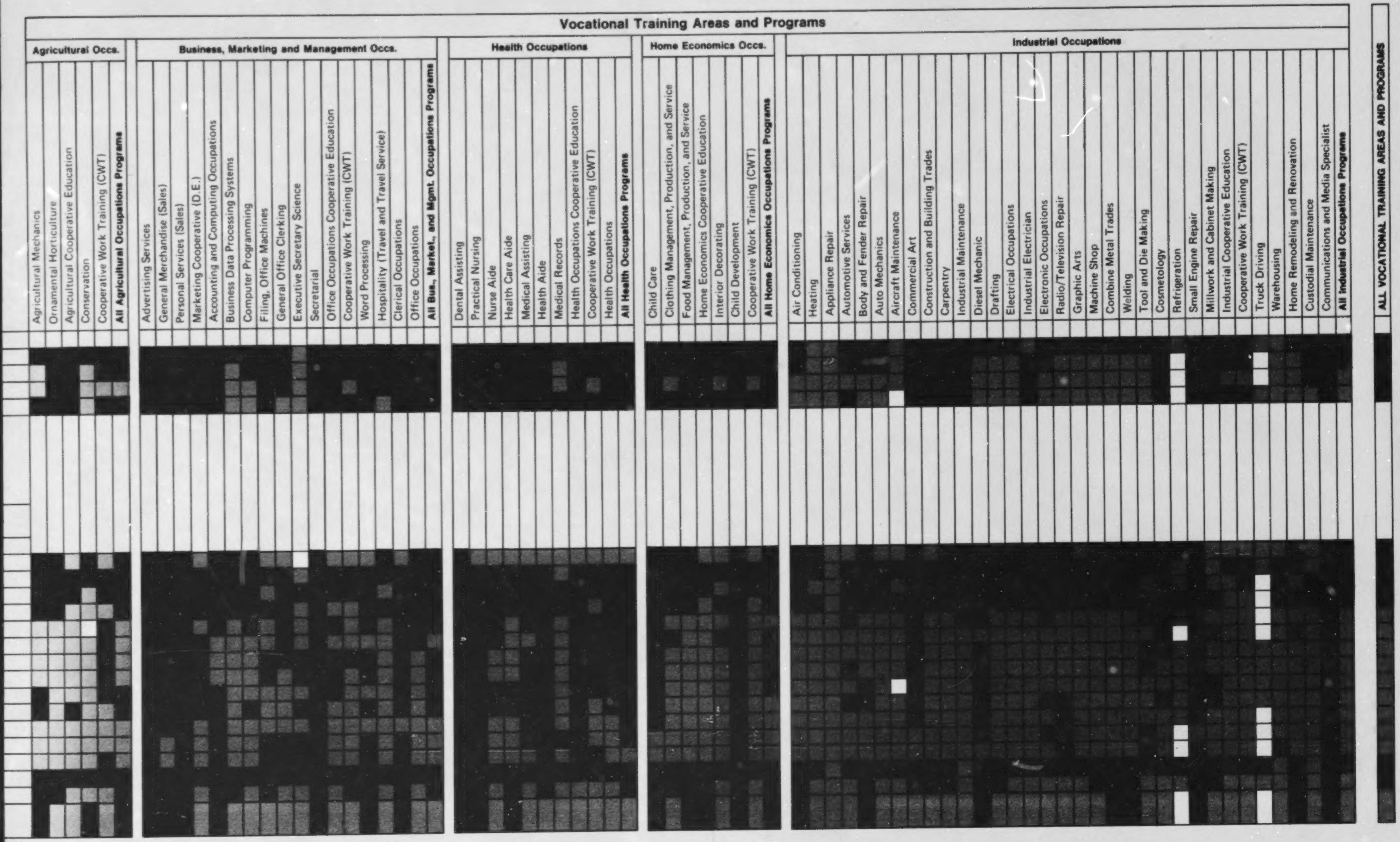
Conversations

17. Be able to handle criticism, disagreement, or disappointment during a conversation
18. Initiate and maintain task focused or friendly conversations with another individual
19. Initiate, maintain, and draw others into task focused or friendly group conversations
20. Join in task focused or friendly group conversations

Reasoning Skills

Verbal Reasoning

1. Generate or conceive of new or innovative ideas
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation
3. Understand and explain the main idea in another's written or oral communication
4. Recall ideas, facts, theories, principles, and other information accurately from memory
5. Organize ideas and put them into words rapidly in oral and written conversations
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values
7. State one's point of view, opinion, or position in written or oral communication
8. Defend one's point of view, opinion, or position in written or oral communication
9. Distinguish between fact and opinion in one's own and in other's written and oral communication
10. Identify the conclusions in other's written or oral communication
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion
12. Compile one's own notes taken on several written sources into a single report
13. Compile ideas, notes, and materials supplied by others into a single report
14. Carry out correctly written or oral instructions given by another
15. Observe another's performance of a task to identify whether the perfomance is satisfactory or needs to be improved
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved



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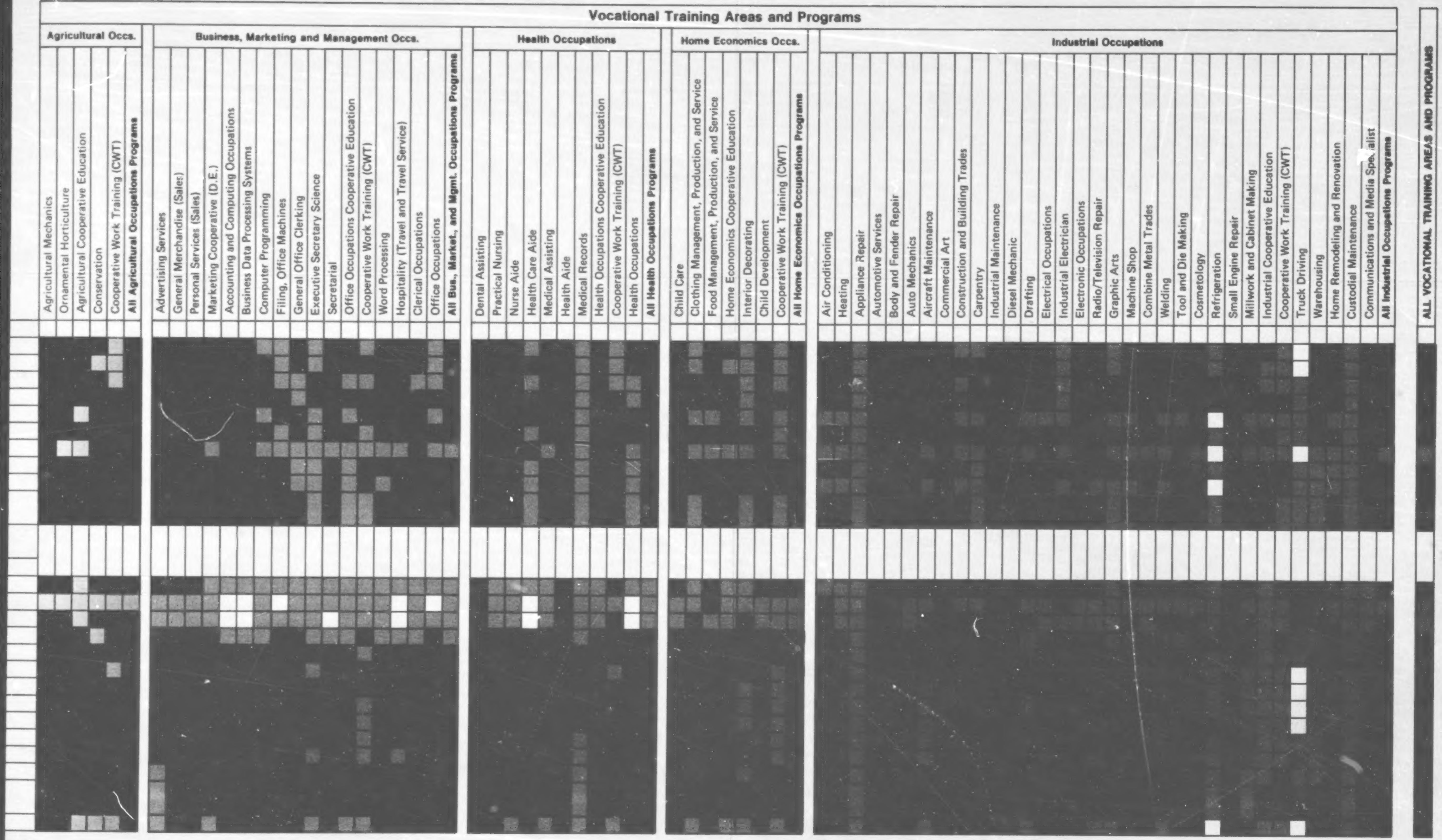
Problem Solving

17. Recognize or identify the existence of a problem given a specific set of facts
18. Ask appropriate questions to identify or verify the existence of a problem
19. Enumerate the possible causes of a problem
20. Use efficient methods for eliminating the causes of a problem
21. Judge the credibility of a source of information
22. Identify important information needed to solve a problem
23. Identify other's and one's own assumptions relating to a problem
24. Generate or conceive of possible alternative solutions to a problem
25. Describe the application and likely consequences of possible alternative problem solutions
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue

Planning

27. Sort objects according to similar physical characteristics including shape, color, and size
28. Estimate weight of various objects of different shapes, sizes and makeup
29. Estimate length, width, height, and distance between objects
30. Use the senses of touch, sight, smell, taste, and hearing
31. Set priorities or the order in which several tasks will be accomplished
32. Set the goals or standards for accomplishing a specific task
33. Enumerate a set of possible activities needed to accomplish a task
34. Determine how specific activities will assist in accomplishing a task
35. Select activities to accomplish a specific task
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished
37. Estimate the time required to perform activities needed to accomplish a specific task
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task
40. Revise or update periodically plans and activities for accomplishing a specific task

Vocational Training Areas and Programs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Conclusions, Implications, and Recommendations

The purpose of this study was to determine the skill areas and skills which were generalizable within and across secondary vocational training program areas and programs. The major research problem was to (a) develop, validate, and determine the reliability of an instrument, and (b) identify which mathematics, communications, interpersonal relations, reasoning, and other skills were generalizable within and across secondary agricultural; business, marketing, and management; health; home economics; and industrial occupations training programs. However, as is the case with most investigations, the study necessarily had some limitations.

First, the study did not include all types of vocational programs at the secondary school level, which in many states and local school districts, are considered vocational. For example, industrial arts programs, consumer homemaking programs, and general business programs typically offered at comprehensive high schools were not included in the population for this study. The rationale and methods for this study delimited the population to those students enrolled in skill training programs at the secondary level and which occur at area vocational centers. As a result, no attempt was made to generalize the findings beyond the population selected for this study. However, the rationale, procedures, and instruments used should be equally applicable and useful in other vocational settings and populations.

Secondly, all skills which students may need and are potentially generalizable for success in vocational programs were not investigated. For example, the manipulative or occupational/technical skills were not examined. The rationale for this study suggested that vocational education has traditionally dealt with and continues to focus most of its attention in this area. Further, manipulative skills tend to become occupationally specific. However, as noted in the findings, broad manipulative skills including eye-hand coordination, manual dexterity, and certain physical abilities were noted as important by several teachers in the survey.

Conclusions

The conclusions of this study are based on the data presented and discussed for each of the four objectives. They are interpreted in accordance with the rationale for and design of the study:

1. The construct or concept of generalizable skills exists and is capable of identifying the skills that are necessary and important for students to succeed in their secondary vocational training programs.

2. The Generalizable Skills Importance Questionnaire ratings provided by the secondary vocational training teachers possess content and face validity and are highly reliable, accurate, and internally consistent measures of the mathematics, communications, interpersonal relations, and reasoning skills that are necessary for students to succeed in agricultural; business, marketing, and management; health; home economics; and industrial occupations programs.

3. Most mathematics, communications, interpersonal relations, and reasoning skills are very important and highly generalizable within and across secondary agricultural occupations programs, however, various reasoning, communications, and mathematics skills have only moderate importance and medium generalizability within several individual programs; and interpersonal relations skills appear to be most important and generalizable while communications skills seem to have moderate importance and medium generalizability.

4. A majority of mathematics, communications, interpersonal relations, and reasoning skills are very important and highly generalizable within secondary business, marketing, and management occupations programs; interpersonal relations skills are particularly very important and highly generalizable; each of the communications and interpersonal relations skills are very important and highly generalizable across programs; and all skills are at least moderately important within virtually each individual program.

5. Several reasoning skills and most communications and interpersonal relations skills are very important and highly generalizable within and across health and home economics occupations programs, however, a majority of the mathematics skills are only moderately important and have medium generalizability for most individual programs.

6. Most mathematics, interpersonal relations, and reasoning skills are very important and highly generalizable within several individual industrial occupations programs while communications skills appear only moderately important and have medium generalizability; and several individual programs, such as, air conditioning, machine shop, tool and die making, electronics occupations, and welding require different levels of algebra, geometry, and trigonometry.

7. There is a core of mathematics, communications, interpersonal relations, and reasoning skills which are basic to, necessary for success in, and transferable or common across several secondary vocational training program areas and programs; most of these core skills are very important and highly generalizable; and all interpersonal relations skills are very important for success and highly generalizable across all program areas and programs.

8. Several programs in each of the program areas place particular importance on personal appearance and hygiene, positive attitudes, productivity, typing/keyboarding, and motor skills (e.g., manual dexterity, eye-hand coordination, gross motor movements).

Implications

Based on the findings and conclusions of this study, there appear to be several implications for practice in secondary vocational training programs and future research. The results suggested that the concept of generalizable skills existed and was reliable and valid in terms of being capable of identifying the skills that are basic to, necessary for success in, and transferable/common within and/or across secondary vocational training programs. There is a core of generalizable skills that are necessary and important for success in several programs. Students need high levels of skills in the generalizable skill areas of mathematics, communications, interpersonal relations, and reasoning to succeed in several secondary vocational training programs.

The majority of prior research relating to basic, transferable, or generalizable skills has focused on occupations or employment settings. However, clear indices or quantitative measures of importance or generalizability are not commonly available. This study included a comprehensive review of literature regarding identification of skills from previous research and reviews of the skills by employers and workers. The generalizable skills identified in this study, therefore, are at least to some extent skills that are important and generalizable in several secondary vocational training programs and occupations.

The results of this study provide reliable, valid, and useful information for teachers, counselors, administrators, paraprofessionals, and other school personnel regarding the generalizable skill requirements of secondary vocational training programs. Knowledge of the mathematics, communications, interpersonal relations, and reasoning skills requirements of programs can assist by providing information for the development of meaningful individualized vocational education plans and programs in areas, such as, assessment, instructional delivery, and evaluation.

Secondary vocational training programs will continue to enroll students having wide ranges of interests, abilities, and aptitudes. In addition, as high or advanced technology becomes more operational, vocational programs and occupations are likely to become increasingly information-oriented and require high skill proficiencies in generalizable skill areas. The information with respect to the importance and generalizability of the skill areas/skills within and across the program areas/programs provides a basis upon which assessment strategies and procedures can be developed that are designed to measure the functional learning abilities and problems of students in their programs. Eventually, students' skills could be formatively assessed at the beginning, during, and at the end of their programs. Valid and reliable assessment procedures could suggest appropriate instructional, support, and remedial services necessary for students who lack the generalizable skills to succeed in their vocational programs. Ultimately, students with different functional handicaps and disadvantages may be able to experience success in programs, complete programs, acquire marketable and saleable skills, and obtain gainful employment in the world of work.

Recommendations

Based on the research methods, findings, and conclusions of this study, several recommendations can be made for practice and future research. The recommendations include:

1. Future administrations of the Generalizable Skills Importance Questionnaire (GSIQ) should include retests. Retest administrations will provide information regarding the stability of ratings and thus enhance the reliability of the GSIQ.

2. Future administrations of the GSIQ should include other populations at the elementary, secondary, post-secondary, and/or adult levels. The more general vocational programs including industrial arts, consumer homemaking, and general business could be surveyed. The rationale, instruments, and procedures used in this study should be equally applicable to other populations/programs. Future studies should use populations where special populations (handicapped, disadvantaged, and limited English proficient) as well as non-special populations are known to exist.

3. Future research studies and practice should explore other potential generalizable skill areas including manipulative skills and science skills/knowledge. Science skills and knowledge currently do not appear to be generalizable. However, as high technology (which applies science skills and knowledge) continues to impact on vocational programs and occupations, the need for science skills/knowledge is likely to increase continuously.

4. The current list of generalizable skill areas/skills should be updated regularly to ensure its appropriateness for secondary vocational training programs. Continual updating should include examining new and/or emerging programs and occupations, such as, robotics and laser optics.

5. School personnel including teachers, counselors, administrators, paraprofessionals and others should begin or continue to use generalizable skills in instructional planning, curriculum development, instructional methods and delivery, and monitoring and evaluation. Teachers should examine their curricula and infuse assessment, teaching, monitoring, and evaluation activities to develop students' generalizable skills.

6. An investigation should be conducted to determine the extent to which teachers and other personnel are using or teaching generalizable skills in their programs.

7. Alternative assessment instruments need to be developed and validated to measure students' skill levels in the generalizable skill areas of mathematics, communications, interpersonal relations, and reasoning. Assessment strategies and procedures could take forms, such as, student self-ratings, teacher ratings, and performance tests.

8. Strategies and procedures need to be developed to provide students, who are known to possess functional learning problems, with the necessary instructional, support, and/or remedial services for succeeding in their vocational programs. Strategies and procedures should include and describe an array of services, persons involved in delivering services, when services will be rendered, how services will be provided, where services will be provided, and procedures to evaluate the effectiveness of services provided to students.

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Appendices

Appendix A

Generalizable Skills Importance Questionnaire

OFFICE USE ONLY

Questionnaire No. ________ 1-4

GENERALIZABLE SKILLS IMPORTANCE QUESTIONNAIRE

The purpose of this questionnaire is to determine the skills which are necessary for students to successfully perform in the vocational training program in which you provide instruction. A list of skills common to several vocational training programs will be developed from your responses to the items below. In the spaces provided, specify your area vocational center, write your name, check (✓) your vocational program area, and specify the vocational training program for which you provide instruction.

Area Vocational Center: ______________________________

Teacher Name: ______________________________

Vocational Program Area:

- ___ Agricultural Occupations 1
- ___ Business, Marketing, and Management Occupations 2
- ___ Health Occupations 3 5
- ___ Home Economics Occupations 4
- ___ Industrial Occupations 5

Vocational Training Program (e.g., horticulture, cooperative education, secretarial, practical nursing, child development, carpentry)

______________________________ ( ) 6-10

Directions: Please respond by indicating with a circle the degree to which each of the skills listed below is important for the success of students in the vocational training program for which you provide instruction. In addition, you may add any skill not included in the list and indicate its importance in the spaces provided at the end of each skill area.

Example:

Generalizable Skill	**Degree of Importance** Not Important — Moderately Important — Very Important
Add and subtract common fractions (e.g. 4/8 + 2/8 = 6/8, 3/6 - 1/3 = 1/6)	1 2 3 4 5 [✓ 6] 7

OVER

Generalizable Skills

Degree of Importance

mathematics skills

		Not Important		Moderately Important			Very Important		
1.	Read, write, and count single and multiple digit whole numbers (e.g., 4; 250; 6,379; 1,475,000)	1	2	3	4	5	6	7	11
2.	Add and subtract single and multiple digit whole numbers (e.g., 9 + 7 = 16; 10,268 - 5,183 = 5,085)	1	2	3	4	5	6	7	12
3.	Multiply and divide single and multiple digit whole numbers (e.g., 24 x 8 = 192; 1,350 ÷ 2 = 675)	1	2	3	4	5	6	7	13
4.	Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	1	2	3	4	5	6	7	14
5.	Round off single and multiple digit whole numbers (e.g., 19 → 20, 174 → 170)	1	2	3	4	5	6	7	15
6.	Read and write common fractions (e.g., 1/4, 3/2, $1\frac{3}{5}$)	1	2	3	4	5	6	7	16
7.	Add and subtract common fractions (e.g., 4/8 + 2/8 = 6/8, 3/6 - 1/3 = 1/6)	1	2	3	4	5	6	7	17
8.	Multiply and divide common fractions (e.g., 1/2 × 1/3 = 1/6, 6/9 ÷ 2/3 = 1)	1	2	3	4	5	6	7	18
9.	Solve word problems with common fractions	1	2	3	4	5	6	7	19
10.	Carry out arithmetic computations involving dollars and cents	1	2	3	4	5	6	7	20
11.	Read and write decimals in one and more places (e.g., .1, .268, .40327)	1	2	3	4	5	6	7	21
12.	Round off decimals to one or more places (e.g., .16 → .2, .9338 → .93)	1	2	3	4	5	6	7	22
13.	Multiply and divide decimals in one or more places (e.g., .2 × .348 = .0696, .6 ÷ .3 = 2)	1	2	3	4	5	6	7	23

OVER

	Mathematic Skills (cont'd)	Not Important		Moderately Important			Very Important		
14.	Add and subtract decimals in one or more places (e.g., .1 + .02 = .12, .409 - .31 = .099)	1	2	3	4	5	6	7	24
15.	Solve word problems with decimals in one or more places	1	2	3	4	5	6	7	25
16.	Read and write percents (e.g., 16%, 25%, 150%)	1	2	3	4	5	6	7	26
17.	Compute percents (e.g., 5% of 50 = $2\frac{1}{2}$ or 2.5)	1	2	3	4	5	6	7	27
18.	Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	1	2	3	4	5	6	7	28
19.	Solve word problems by selecting and using correct order of operations (e.g., addition, subtraction, multiplication, and division)	1	2	3	4	5	6	7	29
20.	Perform written calculations quickly	1	2	3	4	5	6	7	30
21.	Compute averages	1	2	3	4	5	6	7	31
22.	Read numbers or symbols from time, weight, distance, and volume measuring scales (e.g., clocks, graduated scales, rulers, beakers, measuring cups)	1	2	3	4	5	6	7	32
23.	Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	1	2	3	4	5	6	7	33
24.	Use a measuring device to determine an object's weight, distance, or volume in metric units	1	2	3	4	5	6	7	34
25.	Perform basic metric conversions involving weight, distance, and volume (e.g., pounds to grams, inches to meters, gallons to liters)	1	2	3	4	5	6	7	35
26.	Solve problems involving time, weight, distance, and volume	1	2	3	4	5	6	7	36
27.	Use a calculator to perform basic arithmetic operations to solve problems	1	2	3	4	5	6	7	37

OVER

Mathematic Skills (cont'd)	Not Important		Moderately Important			Very Important		
28. Determine if a solution to a mathematical problem is reasonable	1	2	3	4	5	6	7	38
29. ______________________________	1	2	3	4	5	6	7	39
30. ______________________________	1	2	3	4	5	6	7	40
31. ______________________________	1	2	3	4	5	6	7	41
32. ______________________________	1	2	3	4	5	6	7	42

communications skills

	Not Important		Moderately Important			Very Important		
1. Use plural words appropriately in writing and speaking (e.g., hammers; duties; data)	1	2	3	4	5	6	7	43
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking (e.g., cannot-can't; does not - doesn't)	1	2	3	4	5	6	7	44
3. Use appropriate abbreviations of words in writing and speaking (e.g., square feet - sq. ft.; equipment - equip.)	1	2	3	4	5	6	7	45
4. Use words appropriately which mean the same as other words but are spelled differently (e.g., big-large; tall-high)	1	2	3	4	5	6	7	46
5. Use words correctly which sound the same as other words but that have different meanings and spellings (e.g., coarse - course; stationary - stationery)	1	2	3	4	5	6	7	47
6. Use words appropriately which are opposites of one another (e.g., assemble - disassemble; up - down)	1	2	3	4	5	6	7	48
7. Use appropriate word choices in writing and speaking	1	2	3	4	5	6	7	49

OVER

Communication Skills (cont'd)

	Not Important			Moderately Important			Very Important	
8. Add appropriate beginnings and endings to words to change their meaning (e.g., organize - reorganize; work - workable)	1	2	3	4	5	6	7	50
9. Punctuate one's own correspondence, directives, or reports	1	2	3	4	5	6	7	51
10. Read, understand, and find information or gather data from books, manuals, directories, or other documents	1	2	3	4	5	6	7	52
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	1	2	3	4	5	6	7	53
12. Read and understand forms	1	2	3	4	5	6	7	54
13. Read and understand short notes, memos, and letters	1	2	3	4	5	6	7	55
14. Read and understand graphs, charts, and tables to obtain factual information	1	2	3	4	5	6	7	56
15. Understand the meanings of words in sentences	1	2	3	4	5	6	7	57
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	1	2	3	4	5	6	7	58
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	1	2	3	4	5	6	7	59
18. Review and edit other's correspondence, directives, or reports	1	2	3	4	5	6	7	60
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	1	2	3	4	5	6	7	61
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	1	2	3	4	5	6	7	62
21. Speak fluently with individuals or groups	1	2	3	4	5	6	7	63
22. Pronounce words correctly	1	2	3	4	5	6	7	64

OVER

	Communication Skills (cont'd)	Not Important		Moderately Important			Very Important		
23.	Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	1	2	3	4	5	6	7	65
24.	Restate or paraphrase a conversation to confirm one's own understanding of what was said	1	2	3	4	5	6	7	66
25.	Ask appropriate questions to clarify another's written or oral communications	1	2	3	4	5	6	7	67
26.	Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	1	2	3	4	5	6	7	68
27.	Take accurate notes which summarize the material presented from spoken conversations	1	2	3	4	5	6	7	69
28.	____________________	1	2	3	4	5	6	7	70
29.	____________________	1	2	3	4	5	6	7	71
30.	____________________	1	2	3	4	5	6	7	72
31.	____________________	1	2	3	4	5	6	7	73

interpersonal relations skills

		Not Important		Moderately Important			Very Important		
1.	Work effectively under different kinds of supervision	1	2	3	4	5	6	7	74
2.	Work without the need for close supervision	1	2	3	4	5	6	7	75
3.	Work cooperatively as a member of a team	1	2	3	4	5	6	7	76
4.	Get along and work effectively with people of different personalities	1	2	3	4	5	6	7	77

OVER

Interpersonal Relations Skills (cont'd)	Not Important		Moderately Important			Very Important		
5. Show up regularly and on time for activities and appointments	1	2	3	4	5	6	7	78 79-80/01 1-4 dup
6. Work effectively when time, tension, or pressure, are critical factors for successful performance	1	2	3	4	5	6	7	5
7. See things from another's point of view	1	2	3	4	5	6	7	6
8. Engage appropriately in social interactions and situations	1	2	3	4	5	6	7	7
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	1	2	3	4	5	6	7	8
10. Plan, carry out, and complete activities at one's own initiation	1	2	3	4	5	6	7	9
11. Instruct or direct someone in the performance of a specific task	1	2	3	4	5	6	7	10
12. Follow instructions or directions in the performance of a specific task	1	2	3	4	5	6	7	11
13. Demonstrate to someone how to perform a specific task	1	2	3	4	5	6	7	12
14. Assign others to carry out specific tasks	1	2	3	4	5	6	7	13
15. Speak with others in a relaxed and self-confident manner	1	2	3	4	5	6	7	14
16. Compliment and provide constructive feedback to others at appropriate times	1	2	3	4	5	6	7	15
17. Be able to handle criticism, disagreement, or disappointment during a conversation	1	2	3	4	5	6	7	16
18. Initiate and maintain task focused or friendly conversations with another individual	1	2	3	4	5	6	7	17
19. Initiate, maintain, and draw others into task focused or friendly group conversations	1	2	3	4	5	6	7	18
20. Join in task focused or friendly group conversations	1	2	3	4	5	6	7	19

OVER

Interpersonal Relations Skills (cont'd)

	Not Important		Moderately Important			Very Important		
21. ______________________	1	2	3	4	5	6	7	20
22. ______________________	1	2	3	4	5	6	7	21
23. ______________________	1	2	3	4	5	6	7	22
24. ______________________	1	2	3	4	5	6	7	23

reasoning skills

	Not Important		Moderately Important			Very Important		
1. Generate or conceive of new or innovative ideas	1	2	3	4	5	6	7	24
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	1	2	3	4	5	6	7	25
3. Understand and explain the main idea in another's written or oral communication	1	2	3	4	5	6	7	26
4. Recall ideas, facts, theories, principles, and other information accurately from memory	1	2	3	4	5	6	7	27
5. Organize ideas and put them into words rapidly in oral and written conversations	1	2	3	4	5	6	7	28
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	1	2	3	4	5	6	7	29
7. State one's point of view, opinion, or position in written or oral communication	1	2	3	4	5	6	7	30
8. Defend one's point of view, opinion, or position in written or oral communication	1	2	3	4	5	6	7	31

OVER

Reasoning Skills (cont'd)

		Not Important		Moderately Important			Very Important		
9.	Distinguish between fact and opinion in one's own and in other's written and oral communication	1	2	3	4	5	6	7	32
10.	Identify the conclusions in other's written or oral communication	1	2	3	4	5	6	7	33
11.	Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	1	2	3	4	5	6	7	34
12.	Compile one's own notes taken on several written sources into a single report	1	2	3	4	5	6	7	35
13.	Compile ideas, notes, and materials supplied by others into a single report	1	2	3	4	5	6	7	36
14.	Carry out correctly written or oral instructions given by another	1	2	3	4	5	6	7	37
15.	Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	1	2	3	4	5	6	7	38
16.	Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	1	2	3	4	5	6	7	39
17.	Recognize or identify the existence of a problem given a specific set of facts	1	2	3	4	5	6	7	40
18.	Ask appropriate questions to identify or verify the existence of a problem	1	2	3	4	5	6	7	41
19.	Enumerate the possible causes of a problem	1	2	3	4	5	6	7	42
20.	Use efficient methods for eliminating the causes of a problem	1	2	3	4	5	6	7	43
21.	Judge the credibility of a source of information	1	2	3	4	5	6	7	44
22.	Identify important information needed to solve a problem	1	2	3	4	5	6	7	45

OVER

Reasoning Skills (cont'd)

	Not Important			Moderately Important		Very Important		
23. Identify other's and one's own assumptions relating to a problem	1	2	3	4	5	6	7	46
24. Generate or conceive of possible alternative solutions to a problem	1	2	3	4	5	6	7	47
25. Describe the application and likely consequences of possible alternative problem solutions	1	2	3	4	5	6	7	48
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	1	2	3	4	5	6	7	49
27. Sort objects according to similar physical characteristics including shape, color, and size	1	2	3	4	5	6	7	50
28. Estimate weight of various objects of different shapes, sizes, and makeup	1	2	3	4	5	6	7	51
29. Estimate length, width, height, and distance between objects	1	2	3	4	5	6	7	52
30. Use the senses of touch, sight, smell, taste, and hearing	1	2	3	4	5	6	7	53
31. Set priorities or the order in which several tasks will be accomplished	1	2	3	4	5	6	7	54
32. Set the goals or standards for accomplishing a specific task	1	2	3	4	5	6	7	55
33. Enumerate a set of possible activities needed to accomplish a task	1	2	3	4	5	6	7	56
34. Determine how specific activities will assist in accomplishing a task	1	2	3	4	5	6	7	57
35. Select activities to accomplish a specific task	1	2	3	4	5	6	7	58
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	1	2	3	4	5	6	7	[illegible]
37. Estimate the time required to perform activities needed to accomplish a specific task	1	2	3	4	5	6	7	60

OVER

Reasoning Skills (cont'd)	Not Important		Moderately Important			Very Important		
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	1	2	3	4	5	6	7	61
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	1	2	3	4	5	6	7	62
40. Revise or update periodically plans and activities for accomplishing a specific task	1	2	3	4	5	6	7	63
41. ______________________________	1	2	3	4	5	6	7	64
42. ______________________________	1	2	3	4	5	6	7	65
43. ______________________________	1	2	3	4	5	6	7	66
44. ______________________________	1	2	3	4	5	6	7	67

In the spaces provided below, you may, if appropriate, add and indicate the importance of any skill which is necessary for the success of students in your program in skill areas other than mathematics, communications, interpersonal relations, reasoning, or the vocational/occupational (i.e., technical, psychomotor) skills specific to your program.

1. ______________________________	1	2	3	4	5	6	7	68
2. ______________________________	1	2	3	4	5	6	7	69
3. ______________________________	1	2	3	4	5	6	7	70
4. ______________________________	1	2	3	4	5	6	7	71

Appendix B

List of Science Skills and Knowledge Areas

List of Science Skills and Knowledge Areas

Biology Skills

1. Understand the basic names, characteristics, structures, and theories of animal or plant cells.
2. Have an advanced knowledge of animal or plant cells.
3. Use a microscope to classify objects or differentiate between animal and plant cells.
4. Seed, plant, cultivate, or look after plants, shrubs, or trees.
5. Understand and use the terms and theories of plant life and reproduction (e.g., photosynthesis, pollination, fertilization).
6. Have a knowledge of human skeletal, muscular, and body systems.
7. Understand the basic terms and theories related to diseases.
8. Understand the advanced terms and theories related to diseases.
9. Have a knowledge of nutrients and the processes of the digestive system.
10. Have a basic knowledge and understand advanced concepts of heredity (e.g., genetics, pure breeding, chromosome theory, variation and mutation, Mendell's Law of Dominance, dominant and recessive characteristics).
11. Understand the physical characteristics, feeding, breathing, and reproduction; methods of various classes of animals (e.g., mammals, birds, reptiles, fishes, insects).

Chemistry Skills

1. Have a basic knowledge of matter (e.g., solids, liquids, and gases).
2. Have an advanced knowledge of matter including conducting physical or chemical tests.
3. Understand and use basic concepts of density and buoyancy.
4. Determine the specific gravity of objects or liquids.
5. Solve buoyancy, flotation, and displacement problems.
6. Understand and use principles relating to density and buoyancy (e.g., Archimedes' Principle, principle of flotation).

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7. Understand and use the laws and principles related to gases (e.g., Boyle's Law, Charles' Law).

8. Solve problems involving the volume of gas at different temperatures and pressures, and the volume of the products of a chemical reaction involving gases.

9. Prepare gases (e.g., gases which mix one with another, but do not combine chemically).

10. Understand and use basic terms, methods, theories, and principles relating to heat (e.g., conduction, convection, radiation).

11. Have advanced knowledge of heat concepts (e.g., Kinetic Molecular Theory).

12. Solve problems relating to heat (e.g., amount of heat required to change substance temperature to given level, heat of fusion, mixture problems).

13. Understand and use basic terms, chemical properties, theories, and concepts related to acids and bases.

14. Have an advanced knowledge of acids and bases.

15. Use indicators (e.g., litmus paper to identify or test the presence of acids or bases).

16. Measure pH (acidity or alkalinity).

17. Understand and use basic terms, chemical and physical properties, theories, and concepts related to water and solutions.

18. Have an advanced knowledge of water and solutions.

19. Prepare or test water and solutions for a particular purpose or use (e.g., consumption, electrical conductivity).

20. Understand and use terms related to hydrates (compounds mixed with water).

21. Understand and use kinetic molecular atomic theory and the concept of the atom.

22. Understand and use advanced atomic theory.

23. Understand and use the periodic law.

24. Use of periodic table of the elements.

25. Understand the characteristics of halogens (fluorine, bromine, chlorine, iodine).

26. Understand the characteristics of metals.

27. Understand and use basic terms, characteristics, and formulae (related to hydrocarbons).

28. Have advanced knowledge of hydrocarbons.

29. Understand and use basic terms, laws, formulae, calculations, equations, and tests relating to chemical reactions.

30. Understand and use advanced chemistry concepts including calculation of moles (molecules) present in a substance, atomic weight for elements or compounds, percent composition of compounds or mixtures, and determine empirical formulae or molecular formulae of a substance.

31. Use various types of lab equipment.

32. Understand and use safety precautions concerning acids and poisons, caustics, flammables, and pressure gases.

33. Use the scientific method by establishing hypotheses, testing hypotheses, classifying results, and reporting experiments.

Physics Skills

1. Have basic knowledge and understand basic terms, theories, and laws concerning the concepts of force, work, power, and energy.

2. Understand and use advanced terms related to force, work, power, and energy.

3. Solve problems involving force, work, power, and energy.

4. Draw force (vector) diagrams to determine the unbalance force acting on an object.

5. Understand and use terms including mechanical advantage, effort and amount of work done, distance of effort and distance of load moved, friction, static friction, and kinetic friction.

6. Determine the difference in magnitude between static and kinetic friction.

7. Identify levers by classes and by parts.

8. Solve problems such as mechanical advantage for practical applications of levers, pulleys, wheels and axels, inclined planes, wedges, or jack screws.

9. Solve simple motion problems including distance, rate, and time.

10. Solve complex motion problems including acceleration, average velocity, and displacement.

11. Understand and use terms related to motion.

12. Construct, read, and interpret displacement time graphs.

13. Understand and use the concept of "Frame of Reference."

14. Understand simple terms relating to vibratory motion and sound (e.g., period, frequency, and amplitude).

15. Understand complex terms relating to vibratory motion and sound (e.g., mechanical waves, elastic medium, condensation).

16. Understand concepts relating to vibratory motion and sound (e.g., how beats are produced, type of waves which transmit sounds, relationship between frequency and pitch).

17. Calculate problems relating to vibratory motion and sound (e.g., determine distance by time of echo; determine frequency or period; calculate velocity of sound; calculate length, tension, or diameter of wire for given frequencies).

18. Use magnets including magnet keepers and electromagnets.

19. Understand and use concepts and terms relating to magnets (e.g., action at a distance, magnetic shield, magnetic lines of force).

20. Illustrate or describe magnetic fields.

21. Use a compass by explaining or demonstrating how a compass works, measuring direction, and following directions.

22. Understand and use concepts relating to compasses including the difference between north magnetic pole and the north geographic pole, and the difference between north pole and the north seeking pole of a compass.

23. Interpret or calculate magnetic declinations.

24. Understand and use concepts relating to static electricity (e.g., static charges, grounding atoms, movement of electrons).

25. Understand and use the atomic numbers for the more common elements.

26. Use an electroscope by explaining or demonstrating how charges are formed in an electroscope through charge by contact and charge by induction, understanding the principle of grounding and shielding, and understanding the principles of electric discharge.

27. Understand and use basic electric cells (batteries), circuits, terms, and circuit diagrams relating to electricity.

28. Solve electricity problems by measuring or calculating electrical loads or requirements (e.g., read electric meters; measure voltage drops, current, or component resistance in series or parallel circuits; calculate voltage, resistance, power, amperes, volts, kilowatt hours).

29. Understand and use electronics terms (e.g., transistor, diode, amplification, electron theory).

30. Draw or read schematic diagrams and be able to discuss the contruction and characteristics of T.V. cameras, photo electric cells, diode tubes, triode tubes, electron guns, x-ray tubes, and electron microscopes.

31. Understand and use methods by which electromagnetic waves are produced.

32. Identify wavelength on the electromagnetic wave spectrum of A.M. radio, F.M. radio, T.V. picture, and microwave.

33. Understand and use the functions of the five component parts of radio transmission and receiving.

34. Understand and use electronics principles (e.g., principles of a radar system).

35. Have a basic knowledge of light concepts including sources and transmission.

36. Have an advanced knowledge of light concepts including converging beams, rectilinear propagation of light, wave theory, and particle theory.

37. Understand the principles of a pin hole camera.

38. Understand and use basic concepts, laws, and diagrams relating to reflection and refraction of light.

39. Understand and use the basic laws, theories, and spectrums of color.

40. Understand and use basic knowledge of the universe including physical laws, characteristics, names of the heavenly bodies, and fundamental terms.

41. Understand and use basic nuclear physics terms (e.g., radiation, radioisotopes, nuclear fission).

42. Have advanced knowledge of nuclear physics (e.g., operation of nuclear reactor).

43. Measure length, weight, capacity, and volume using British and Metric conversions.

44. Read or write large or small numbers in scientific notation (e.g., 5×10^8).

45. Compensate for weight variations caused by gravity.

46. Calculate the gravitational forces between two objects.

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Appendix C

Means, Standard Deviations, and Sample Sizes of the Generalizable Skills Importance Questionnaire Ratings for the Mathematics, Communications, Interpersonal Relations, and Reasoning Skills in Secondary Agricultural; Business, Marketing, and Management; Health; Home Economics; and Industrial Occupations Training Programs

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computing Occupations	Business Data Processing Systems
Whole Numbers 1. Read, write, and count single and multiple digit whole numbers	x̄=7.00 sd=0 n=2	6.50 .58 4	7.00 0 1	6.47 .77 19	7.00 0 7	6.54 1.00 28
2. Add and subtract single and multiple digit whole numbers	7.00 0 2	6.50 .58 4	7.00 0 1	6.37 .83 19	7.00 0 7	6.36 1.31 28
3. Multiply and divide single and multiple digit whole numbers	7.00 0 [illegible]	6.50 .58 4	7.00 0 1	6.42 .84 19	7.00 0 7	6.39 1.29 28
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.50 .71 2	6.25 .50 4	7.00 0 1	5.95 .91 19	6.57 .79 7	6.21 1.00 28
5. Round off single and multiple digit whole numbers	6.50 .71 2	6.25 .96 4	7.00 0 1	5.95 .97 19	7.00 0 7	6.18 1.28 28
Fractions 6. Read and write common fractions	7.00 0 2	6.25 .96 4	7.00 0 1	5.68 1.00 19	6.71 .49 7	5.67 1.41 27
7. Add and subtract common fractions	7.00 0 2	6.50 .58 4	7.00 0 1	5.47 1.12 19	5.86 1.07 7	5.25 1.71 28
8. Multiply and divide common fractions	7.00 0 2	6.50 .58 4	7.00 0 1	5.37 1.12 19	5.86 1.07 7	5.43 1.55 28

APPENDIX I

Means, Standard Deviations, and Sample Sizes of the Ratings for the Mathematics, Communications, Interpersonal Relations, and Reasoning Skills in Secondary Agricultural; Business, Marketing, and Management; Health; Home Economics; and Industrial Occupations Training Programs

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
MATHEMATICS SKILLS	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=6.47 sd= .83 n=15	6.06 .77 16	6.33 .52 6	6.00 0 2	7.00 0 1	6.28 .75 40
2. Add and subtract single and multiple digit whole numbers	6.47 .64 15	6.19 .75 16	6.17 .75 6	6.00 0 2	7.00 0 1	6.30 .69 40
3. Multiply and divide single and multiple digit whole numbers	6.47 .64 15	6.19 .83 16	6.17 .75 6	6.00 0 2	7.00 0 1	6.30 .72 40
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.20 1.21 15	6.38 .81 16	5.50 1.05 6	6.50 .71 2	7.00 0 1	6.20 1.02 40
5. Round off single and multiple digit whole numbers	5.87 .99 15	5.19 1.17 16	5.67 .82 6	4.50 .71 2	7.00 0 1	5.53 1.09 40
Fractions						
6. Read and write common fractions	5.67 1.54 15	5.56 1.37 16	5.33 1.86 6	5.50 2.12 2	7.00 0 1	5.60 1.48 40
7. Add and subtract common fractions	5.60 1.50 15	5.13 1.71 16	5.00 2.00 6	4.50 .71 2	7.00 0 1	5.30 1.62 40
8. Multiply and divide common fractions	5.27 1.62 15	4.94 1.77 16	4.33 1.63 6	4.00 0 2	7.00 0 1	4.98 1.66 40

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=6.57 sd=1.13 n=7	7.00 0 1	7.00 0 1	7.00 0 1	6.32 .99 25	6.33 .72 15
2. Add and subtract single and multiple digit whole numbers	6.29 1.11 7	7.00 0 1	7.00 0 1	7.00 0 1	6.32 .99 25	6.27 .80 15
3. Multiply and divide single and multiple digit whole numbers	6.14 1.22 7	7.00 0 1	7.00 0 1	7.00 0 1	6.28 1.02 25	6.27 .80 15
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.00 1.41 7	7.00 0 1	7.00 0 1	7.00 0 1	5.64 1.60 25	5.87 1.06 15
5. Round off single and multiple digit whole numbers	6.14 1.22 7	7.00 0 1	7.00 0 1	6.00 0 1	6.16 1.14 25	6.00 1.13 15
Fractions						
6. Read and write common fractions	5.71 1.38 7	7.00 0 1	7.00 0 1	6.00 0 1	5.92 1.19 25	5.80 1.21 15
7. Add and subtract common fractions	5.14 1.77 7	7.00 0 1	5.00 0 1	5.00 0 1	5.24 1.64 25	5.47 1.36 15
8. Multiply and divide common fractions	5.00 1.92 7	7.00 0 1	5.00 0 1	4.00 0 1	5.24 1.67 25	5.13 1.51 15

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	x=7.00 sd=0 n=3	6.50 .71 2	6.00 0 1	6.80 .45 5	6.50 .54 8	6.52 .82 130
2. Add and subtract single and multiple digit whole numbers	7.00 0 3	6.50 .71 2	6.00 0 1	6.80 .45 5	6.63 .52 8	6.45 .92 130
3. Multiply and divide single and multiple digit whole numbers	7.00 0 3	6.50 .71 2	6.00 0 1	6.80 .45 5	6.50 .76 8	6.45 .94 130
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.33 1.16 3	6.50 .71 2	4.00 0 1	6.80 .45 5	5.25 1.91 8	6.02 1.21 130
5. Round off single and multiple digit whole numbers	6.00 1.00 3	5.50 2.12 2	6.00 0 1	6.80 .45 5	6.38 .74 8	6.21 1.06 130
Fractions						
6. Read and write common fractions	5.33 1.53 3	6.50 .71 2	4.00 0 1	6.00 1.73 5	5.88 .99 8	5.88 1.20 129
7. Add and subtract common fractions	5.33 1.53 3	5.50 2.12 2	4.00 0 1	5.60 1.67 5	5.25 1.75 8	5.43 1.48 130
8. Multiply and divide common fractions	5.33 1.53 3	5.50 2.12 2	4.00 0 1	5.00 1.67 5	5.00 1.69 8	5.39 1.48 130

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	x=5.00 sd=1.73 n=3	5.83 2.08 12	5.89 1.45 18	4.67 1.53 3	6.00 1.73 3	6.33 .58 3
2. Add and subtract single and multiple digit whole numbers	5.00 1.73 3	5.92 2.11 12	6.00 1.24 18	4.67 1.53 3	6.33 1.16 3	5.67 1.53 3
3. Multiply and divide single and multiple digit whole numbers	4.00 1.73 3	5.92 2.11 12	5.67 1.50 18	4.33 2.08 3	6.33 1.16 3	5.00 2.65 3
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	3.67 1.53 3	5.75 2.05 12	4.33 2.17 18	4.67 1.53 3	5.33 2.89 3	5.00 2.65 3
5. Round off single and multiple digit whole numbers	3.00 2.65 3	5.33 2.02 12	4.33 1.88 18	4.33 .58 3	4.00 2.65 3	5.67 1.53 3
Fractions						
6. Read and write common fractions	3.33 2.31 3	5.67 2.06 12	5.11 1.57 18	6.00 1.00 3	5.67 1.16 3	6.33 .58 3
7. Add and subtract common fractions	2.67 2.08 3	5.83 2.08 12	4.67 1.88 18	5.33 1.53 3	4.67 [illegible] 3	5.33 1.16 3
8. Multiply and divide common fractions	2.67 2.08 3	5.08 2.43 12	4.22 2.07 18	5.33 1.53 3	5.67 1.16 3	4.33 2.08 3

	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
MATHEMATICS SKILLS	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
Whole Numbers					
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=5.00 sd=0 n=1	6.63 .52 8	7.00 0 1	4.20 2.59 5	5.75 1.67 57
2. Add and subtract single and multiple digit whole numbers	5.00 0 1	6.50 .76 8	7.00 0 1	4.20 2.59 5	5.77 1.64 57
3. Multiply and divide single and multiple digit whole numbers	5.00 0 1	6.50 .76 8	7.00 0 1	4.20 2.59 5	5.56 1.81 57
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	4.00 0 1	5.88 1.13 8	7.00 0 1	3.80 2.17 5	4.91 2.04 57
5. Round off single and multiple digit whole numbers	5.00 0 1	5.00 2.00 8	7.00 0 1	3.20 2.17 5	4.58 1.99 57
Fractions					
6. Read and write common fractions	3.00 0 1	6.25 1.39 8	7.00 0 1	4.00 2.35 5	5.33 1.81 57
7. Add and subtract common fractions	3.00 0 1	6.13 1.73 8	7.00 0 1	3.60 2.70 5	5.00 2.08 57
8. Multiply and divide common fractions	3.00 0 1	6.13 1.73 8	7.00 0 1	3.60 2.70 5	4.70 2.18 57

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=5.05 sd=1.63 n=21	6.00 1.41 4	6.35 .93 20	5.38 1.06 8	5.50 2.12 2	4.50 1.60 8
2. Add and subtract single and multiple digit whole numbers	4.86 1.46 21	6.00 1.41 4	6.15 1.18 20	5.25 1.04 8	5.50 2.12 2	4.25 1.28 8
3. Multiply and divide single and multiple digit whole numbers	4.33 1.77 21	5.75 1.89 4	6.10 1.29 20	5.13 1.25 8	5.00 2.83 2	3.88 1.73 8
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	3.84 1.86 19	4.75 2.22 4	5.60 1.54 20	4.33 1.37 6	4.50 3.54 2	4.50 1.60 8
5. Round off single and multiple digit whole numbers	3.52 1.83 21	3.75 1.71 4	5.25 1.80 20	3.88 1.73 8	4.00 2.83 2	3.50 1.85 8
Fractions						
6. Read and write common fractions	4.33 1.77 21	6.00 1.41 4	6.65 .67 20	4.75 1.39 8	5.50 2.12 2	4.13 1.96 8
7. Add and subtract common fractions	3.71 2.05 21	6.25 1.50 4	6.30 .98 20	4.00 1.85 8	5.50 2.12 2	3.75 2.25 8
8. Multiply and divide common fractions	3.48 1.81 21	4.75 2.22 4	6.00 1.45 20	3.75 1.98 8	4.00 2.83 2	4.00 2.14 8

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=7.00 sd=0 n=2	5.55 1.47 65				
2. Add and subtract single and multiple digit whole numbers	7.00 0 2	5.39 1.44 65				
3. Multiply and divide single and multiple digit whole numbers	7.00 0 2	5.11 1.76 65				
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.00 1.41 2	4.71 1.82 61				
5. Round off single and multiple digit whole numbers	6.00 1.41 2	4.20 1.92 65				
Fractions						
6. Read and write common fractions	5.50 2.12 2	5.25 1.76 65				
7. Add and subtract common fractions	5.50 2.12 2	4.82 2.06 65				
8. Multiply and divide common fractions	5.50 2.12 2	4.51 2.05 65				

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=7.00 sd=0 n=5	7.00 0 4	7.00 0 1	6.00 .82 4	5.45 1.43 20	5.85 1.48 41
2. Add and subtract single and multiple digit whole numbers	7.00 0 5	7.00 0 4	7.00 0 1	6.50 .58 4	5.55 1.32 20	5.83 1.26 41
3. Multiply and divide single and multiple digit whole numbers	7.00 0 5	7.00 0 4	7.00 0 1	6.25 .50 4	5.20 1.67 20	5.59 1.40 41
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.40 1.34 5	6.25 1.50 4	3.00 0 1	5.75 1.89 4	4.55 1.61 20	5.17 1.64 41
5. Round off single and multiple digit whole numbers	6.00 1.41 5	5.75 1.50 4	5.00 0 1	5.25 2.22 4	3.95 1.76 20	4.95 1.73 41
Fractions						
6. Read and write common fractions	7.00 0 5	7.00 0 4	7.00 0 1	6.25 .96 4	4.70 1.87 20	5.44 1.67 41
7. Add and subtract common fractions	7.00 0 5	7.00 0 4	5.00 0 1	5.50 2.38 4	4.85 1.76 20	5.39 1.64 41
8. Multiply and divide common fractions	6.40 1.34 5	6.25 1.50 4	4.00 0 1	5.50 2.38 4	4.25 1.77 20	4.73 1.60 40

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=6.00 sd=1.41 n=2	6.14 1.22 7	6.71 .55 24	6.60 .55 5	5.00 1.41 2	6.00 0 5
2. Add and subtract single and multiple digit whole numbers	5.50 .71 2	5.86 1.22 7	6.63 .58 24	6.50 .55 6	5.50 .71 2	6.00 0 5
3. Multiply and divide single and multiple digit whole numbers	5.50 .71 2	5.86 1.22 7	6.54 .66 24	6.50 .55 6	6.00 0 2	6.00 0 5
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	5.50 .71 2	5.14 1.46 7	5.96 .96 24	6.00 1.27 6	6.50 .71 2	5.80 .45 5
5. Round off single and multiple digit whole numbers	3.50 .71 2	4.00 1.83 7	4.79 1.77 24	5.00 1.79 6	6.00 1.41 2	5.60 .55 5
Fractions						
6. Read and write common fractions	6.00 1.41 2	5.43 1.27 7	6.38 .82 24	5.67 1.37 6	7.00 0 2	5.60 1.52 5
7. Add and subtract common fractions	6.50 .71 2	5.43 1.40 7	6.13 1.08 24	6.00 .89 6	7.00 0 2	5.60 1.52 5
8. Multiply and divide common fractions	5.50 2.12 2	4.86 1.35 7	5.29 1.57 24	5.00 1.79 6	6.00 1.41 2	5.00 1.87 5

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
MATHEMATICS SKILLS	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
Whole Numbers 1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=6.72 sd= .68 n=25	6.80 .42 10	6.67 .58 3	6.80 .58 25	6.50 .71 2	6.53 1.07 17
2. Add and subtract single and multiple digit whole numbers	6.68 .69 25	6.90 .32 10	6.67 .58 3	6.84 .47 25	6.50 .71 2	6.71 .47 17
3. Multiply and divide single and multiple digit whole numbers	6.56 .71 25	6.90 .32 10	6.67 .58 3	6.84 .47 25	6.50 .71 2	6.65 .49 17
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	5.92 1.18 24	6.50 .85 10	7.00 0 3	6.72 .68 25	7.00 0 2	5.71 1.72 17
5. Round off single and multiple digit whole numbers	5.84 1.49 25	6.50 .85 10	6.33 1.16 3	6.48 .96 25	6.00 1.41 2	5.41 1.42 17
Fractions 6. Read and write common fractions	6.72 .74 25	5.20 2.10 10	6.67 .58 3	5.71 1.68 24	6.50 .71 2	6.65 .61 17
7. Add and subtract common fractions	6.72 .84 25	5.20 1.99 10	6.00 1.73 3	5.56 1.90 25	5.50 2.12 2	6.29 1.05 17
8. Multiply and divide common fractions	6.25 1.19 24	5.10 1.97 10	6.33 1.16 3	5.44 2.04 25	6.00 1.41 2	5.53 1.59 17

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	x=6.70 sd= .56 n-23	6.40 .89 5	6.04 1.00 26	7.00 0 2	5.75 1.39 8	7.00 0 1
2. Add and subtract single and multiple digit whole numbers	6.70 .56 23	6.40 .89 5	5.96 1.28 26	7.00 0 2	5.88 1.13 8	7.00 0 1
3. Multiply and divide single and multiple digit whole numbers	6.61 .58 23	6.60 .89 5	5.96 1.18 26	7.00 0 2	5.86 1.07 7	7.00 0 1
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.30 .93 23	6.60 .89 5	5.23 1.42 26	7.00 0 2	3.00 1.41 7	7.00 0 1
5. Round off single and multiple digit whole numbers	5.74 1.48 23	5.40 1.14 5	5.24 1.30 25	5.00 2.83 2	3.75 1.28 8	7.00 0 1
Fractions						
6. Read and write common fractions	6.78 .42 23	7.00 0 5	5.88 1.27 25	7.00 0 2	4.88 2.10 8	7.00 0 1
7. Add and subtract common fractions	6.70 .47 23	7.00 0 5	5.83 1.20 24	7.00 0 2	5.13 1.64 8	7.00 0 1
8. Multiply and divide common fractions	6.52 .59 23	7.00 0 5	5.56 1.50 25	7.00 0 2	4.63 1.85 8	7.00 0 1

MATHEMATICS SKILLS	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
Whole Numbers 1. Read, write, and count single and multiple digit whole numbers	x=5.83	6.50	5.83	7.00	7.00	5.00
	sd=1.17	1.00	1.27	0	0	0
	n=6	4	12	2	1	1
2. Add and subtract single and multiple digit whole numbers	5.83	6.00	5.75	7.00	7.00	5.00
	1.17	.82	1.29	0	0	0
	6	4	12	2	1	1
3. Multiply and divide single and multiple digit whole numbers	6.00	6.25	5.50	7.00	5.00	5.00
	1.10	.96	1.38	0	0	0
	6	4	12	2	1	1
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	6.33	6.00	5.33	6.00	2.00	6.00
	.82	1.41	1.67	1.41	0	0
	6	4	12	2	1	1
5. Round off single and multiple digit whole numbers	6.00	6.00	4.25	6.00	3.00	5.00
	1.27	.82	1.42	1.41	0	0
	6	4	12	2	1	1
Fractions 6. Read and write common fractions	6.67	6.00	5.33	5.50	5.00	5.00
	.52	.82	1.61	2.12	0	0
	6	4	12	2	1	1
7. Add and subtract common fractions	6.33	6.25	4.75	5.50	3.00	5.00
	.82	.50	1.77	2.12	0	0
	6	4	12	2	1	1
8. Multiply and divide common fractions	6.00	6.50	4.58	5.50	2.00	5.00
	1.27	.58	1.88	2.12	0	0
	6	4	12	2	1	1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
MATHEMATICS SKILLS	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
Whole Numbers						
1. Read, write, and count single and multiple digit whole numbers	$\bar{x}$=7.00 sd=0 n=1	5.00 3.46 3	5.25 2.06 4	6.29 1.13 301		6.21 1.19 593
2. Add and subtract single and multiple digit whole numbers	7.00 0 1	5.00 3.46 3	4.75 2.87 4	6.28 1.09 302		6.17 1.19 594
3. Multiply and divide single and multiple digit whole numbers	7.00 0 1	5.00 3.46 3	4.75 2.87 4	6.19 1.17 301		6.07 1.32 593
4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers	7.00 0 1	5.00 3.46 3	5.00 2.45 4	5.68 1.51 300		5.62 1.58 588
5. Round off single and multiple digit whole numbers	7.00 0 1	5.00 3.46 3	3.75 2.22 4	5.26 1.66 301		5.30 1.69 593
Fractions						
6. Read and write common fractions	7.00 0 1	5.00 3.46 3	5.00 2.45 4	5.94 1.48 300		5.77 1.51 591
7. Add and subtract common fractions	7.00 0 1	5.00 3.46 3	4.50 2.65 4	5.83 1.52 300		5.52 1.68 592
8. Multiply and divide common fractions	6.00 0 1	5.00 3.46 3	4.25 2.75 4	5.40 1.70 299		5.20 1.77 591

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
9. Solve word problems with common fractions	x= 4.80 sd= 1.57 n=15	5.13 1.71 16	4.00 1.41 6	4.50 2.12 2	7.00 0 1	4.85 1.63 40
Decimals						
10. Carry out arithmetic computations involving dollars and cents	5.73 1.79 15	6.69 .60 16	6.33 1.03 6	7.00 0 2	7.00 0 1	6.30 1.29 40
11. Read and write decimals in one or more places	6.40 1.24 15	5.88 1.15 16	4.83 1.94 6	5.00 1.41 2	7.00 0 1	5.90 1.39 40
12. Round off decimals to one or more places	6.20 1.27 15	5.19 1.17 16	4.83 1.60 6	4.50 .71 2	7.00 0 1	5.53 1.36 40
13. Multiply and divide decimals in one or more places	6.13 1.36 15	5.19 1.52 16	5.00 1.67 6	5.00 1.41 2	7.00 0 1	5.55 1.50 40
14. Add and subtract decimals in one or more places	6.13 .99 15	5.38 1.20 16	5.33 1.75 6	5.00 1.41 2	7.00 0 1	5.68 1.25 40
15. Solve word problems with decimals in one or more places	5.20 1.66 15	5.19 1.28 16	4.33 1.37 6	5.00 1.41 2	7.00 0 1	5.10 1.45 40
Percent						
16. Read and write percents	5.93 1.10 15	5.63 .96 16	6.00 .89 6	5.50 .71 2	7.00 0 1	5.83 .98 40
17. Compute percents	5.27 1.03 15	5.63 .96 16	5.33 1.97 6	5.50 .71 2	7.00 0 1	5.48 1.15 40

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
9. Solve word problems with common fractions	$\bar{x}$=7.00 sd=0 n=2	6.00 1.16 4	7.00 0 1	5.00 1.20 19	5.71 1.80 7	5.52 1.42 27
Decimals						
10. Carry out arithmetic computations involving dollars and cents	7.00 0 2	7.00 0 4	7.00 0 1	6.84 .50 19	7.00 0 5	6.50 1.21 26
11. Read and write decimals in one or more places	7.00 0 2	6.50 .58 4	7.00 0 1	6.00 1.29 19	6.14 1.07 7	6.18 .98 28
12. Round off decimals to one or more places	7.00 0 2	7.00 0 4	7.00 0 1	6.00 1.25 19	6.43 .79 7	6.29 1.18 28
13. Multiply and divide decimals in one or more places	7.00 0 2	6.75 .50 4	7.00 0 1	6.00 1.25 19	6.29 .76 7	6.07 1.41 28
14. Add and subtract decimals in one or more places	7.00 0 2	7.00 0 4	7.00 0 1	5.84 1.30 19	6.29 .76 7	6.04 1.35 28
15. Solve word problems with decimals in one or more places	7.00 0 2	6.00 1.16 4	7.00 0 1	5.47 1.31 19	6.50 .55 6	5.82 1.42 28
Percent						
16. Read and write percents	7.00 0 2	6.75 .50 4	7.00 0 1	6.53 .77 19	6.71 .49 7	6.29 .90 28
17. Compute percents	7.00 0 2	6.50 .58 4	7.00 0 1	6.16 1.30 19	6.71 .49 7	6.07 1.12 28

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
9. Solve word problems with common fractions	$\bar{x}$=4.57 sd=1.72 n=7	6.00 0 1	5.00 0 1	3.00 0 1	4.68 1.73 25	4.86 1.66 14
Decimals						
10. Carry out arithmetic computations involving dollars and cents	6.43 .79 7	7.00 0 1	7.00 0 1	7.00 0 1	6.20 1.53 25	6.40 .99 15
11. Read and write decimals in one or more places	6.43 .79 7	7.00 0 1	7.00 0 1	7.00 0 1	5.92 1.47 25	5.73 1.49 15
12. Round off decimals to one or more places	6.43 .79 7	7.00 0 1	7.00 0 1	7.00 0 1	5.92 1.55 25	5.73 1.58 15
13. Multiply and divide decimals in one or more places	6.00 1.29 7	7.00 0 1	6.00 0 1	6.00 0 1	5.64 1.66 25	5.67 1.54 15
14. Add and subtract decimals in one or more places	5.86 1.22 7	7.00 0 1	6.00 0 1	7.00 0 1	5.81 1.42 26	5.53 1.51 15
15. Solve word problems with decimals in one or more places	5.43 1.51 7	7.00 0 1	6.00 0 1	6.00 0 1	5.15 1.62 26	4.93 1.62 15
Percent						
16. Read and write percents	6.00 1.16 7	7.00 0 1	7.00 0 1	7.00 0 1	6.31 1.01 26	6.13 .92 15
17. Compute percents	5.57 1.62 7	7.00 0 1	6.00 0 1	6.00 0 1	6.15 1.32 26	5.87 1.36 15

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CTW)	Word Processing	(Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS., MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
9. Solve word problems with common fractions	$\bar{x}$=5.00 sd=2.00 n=3	5.00 1.41 2	4.00 0 1	5.00 1.58 5	4.14 1.95 7	5.06 1.57 127
Decimals 10. Carry out arithmetic computations involving dollars and cents	6.67 .58 3	6.50 .71 2	7.00 0 1	6.40 1.34 5	6.13 2.10 8	6.52 1.14 126
11. Read and write decimals in one or more places	5.67 1.16 3	5.50 .71 2	6.00 1 1	6.20 1.10 5	5.75 2.05 8	6.06 1.24 130
12. Round off decimals to one or more places	5.33 1.53 3	6.00 1.41 2	6.00 0 1	6.40 .89 5	5.75 2.05 8	6.12 1.31 130
13. Multiply and divide decimals in one or more places	5.67 1.53 3	6.00 0 2	6.00 0 1	6.00 1.23 5	5.63 2.07 8	5.95 1.39 130
14. Add and subtract decimals in one or more places	5.33 1.53 3	5.33 .58 3	6.00 0 1	6.40 .89 5	5.75 2.05 8	5.94 1.32 132
15. Solve word problems with decimals in one or more places	5.00 2.00 3	4.67 1.16 3	6.00 0 1	5.80 1.30 5	4.63 1.85 8	5.47 1.48 131
Percent 16. Read and write percents	5.33 1.53 3	5.67 ,58 3	5.00 0 1	6.80 .45 5	6.13 .84 8	6.33 .90 132
17. Compute percents	4.67 2.08 3	5.00 1.00 3	5.00 0 1	6.80 .45 5	5.88 1.36 8	6.08 1.23 132

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
9. Solve word problems with common fractions	x=2.67 sd=2.08 n=3	5.58 2.11 12	4.33 2.20 18	4.33 .58 3	4.67 2.52 3	4.67 2.31 3
Decimals 10. Carry out arithmetic computations involving dollars and cents	6.33 1.16 3	4.08 2.07 12	3.50 2.01 18	4.33 .58 3	3.33 3.22 3	4.00 2.00 3
11. Read and write decimals in one or more places	4.33 2.52 3	5.67 2.15 12	4.39 1.79 18	5.00 1.00 3	5.00 2.65 3	5.00 1.00 3
12. Round off decimals to one or more places	4.00 2.65 3	5.25 2.05 12	4.28 1.87 18	5.33 .58 3	5.00 2.65 3	4.67 1.53 3
13. Multiply and divide decimals in one or more places	3.00 1.73 3	5.17 2.48 12	4.06 1.98 18	4.67 .58 3	4.67 2.52 3	3.67 2.08 3
14. Add and subtract decimals in one or more places	3.00 1.73 3	5.58 2.11 12	4.28 1.97 18	4.67 .58 3	4.67 2.52 3	4.33 2.08 3
15. Solve word problems with decimals in one or more places	2.67 2.08 3	5.42 2.07 12	3.72 2.16 18	5.00 0 3	4.67 2.52 3	4.33 2.08 3
Percent 16. Read and write percents	4.33 2.08 3	5.67 2.06 12	4.17 1.95 18	5.33 .58 3	5.00 1.73 3	3.33 2.31 3
17. Compute percents	3.33 1.53 3	5.33 2.02 12	4.06 1.89 18	4.33 1.16 3	3.67 1.53 3	3.33 2.31 3

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
9. Solve word problems with common fractions	$\bar{x}$=3.00 sd=0 n=1	5.63 1.85 8	7.00 0 1	3.80 2.17 5	4.70 2.11 57
Decimals					
10. Carry out arithmetic computations involving dollars and cents	5.00 0 1	5.25 2.25 8	7.00 0 1	2.60 1.82 5	4.09 2.12 57
11. Read and write decimals in one or more places	5.00 0 1	6.00 1.69 8	7.00 0 1	3.20 1.92 5	4.93 1.94 57
12. Round off decimals to one or more places	3.00 0 1	5.50 1.77 8	7.00 0 1	2.60 1.82 5	4.63 1.98 57
13. Multiply and divide decimals in one or more places	3.00 0 1	5.88 1.64 8	7.00 0 1	2.80 2.17 5	4.46 2.14 57
14. Add and subtract decimals in one or more places	3.00 0 1	5.75 1.67 8	7.00 0 1	2.60 1.82 5	4.61 2.05 57
15. Solve word problems with decimals in one or more places	3.00 0 1	5.57 1.90 7	7.00 0 1	2.00 1.41 4	4.35 2.18 55
Percent					
16. Read and write percents	5.00 0 1	5.88 1.36 8	7.00 0 1	3.60 2.30 5	4.81 1.97 57
17. Compute percents	3.00 0 1	5.75 1.83 8	7.00 0 1	3.00 2.55 5	4.42 2.04 57

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
9. Solve word problems with common fractions	$\bar{x}$=3.29 sd=1.59 n=21	5.00 2.16 4	5.25 1.71 20	3.25 1.49 8	4.00 2.83 2	3.38 2.20 8
Decimals						
10. Carry out arithmetic computations involving dollars and cents	4.81 1.91 21	7.00 0 4	6.85 .37 20	5.88 1.25 8	7.00 0 2	4.88 1.81 8
11. Read and write decimals in one or more places	3.52 1.63 21	4.75 1.50 4	5.65 1.46 20	4.25 2.19 8	5.00 1.41 2	3.25 1.98 8
12. Round off decimals to one or more places	3.00 1.52 21	4.00 1.83 4	5.60 1.50 20	3.75 1.98 8	3.50 2.12 2	2.88 1.89 8
13. Multiply and divide decimals in one or more places	3.05 1.36 21	4.00 1.83 4	5.40 1.79 20	3.75 1.98 8	3.50 2.12 2	2.63 1.85 8
14. Add and subtract decimals in one or more places	2.96 1.40 22	5.50 1.73 4	5.65 1.63 20	4.38 2.13 8	6.50 .71 2	2.63 1.85 8
15. Solve word problems with decimals in one or more places	2.86 1.52 22	5.00 1.83 4	5.25 1.83 20	3.63 2.26 8	6.50 .71 2	2.63 1.85 8
Percent						
16. Read and write percents	4.09 1.60 22	4.50 1.92 4	5.63 1.50 19	4.75 1.49 8	4.00 2.83 2	3.25 2.32 8
17. Compute percents	3.32 1.62 22	3.75 2.06 4	5.65 1.50 20	3.88 2.10 8	3.50 2.12 2	2.63 2.07 8

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
9. Solve word problems with common fractions	$\bar{x}$=5.00 sd=2.83 n=2	4.08 1.94 65				
Decimals 10. Carry out arithmetic computations involving dollars and cents	6.50 .71 2	5.83 1.63 65				
11. Read and write decimals in one or more places	6.00 1.41 2	4.43 1.90 65				
12. Round off decimals to one or more places	5.50 2.12 2	4.03 1.97 65				
13. Multiply and divide decimals in one or more places	5.50 2.12 2	3.95 1.96 65				
14. Add and subtract decimals in one or more places	5.50 2.12 2	4.24 2.07 66				
15. Solve word problems with decimals in one or more places	5.00 2.83 2	3.96 2.09 66				
Percent 16. Read and write percents	5.50 2.12 2	4.59 1.83 65				
17. Compute percents	5.00 2.83 2	4.09 2.02 66				

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
9. Solve word problems with common fractions	x=6.20 sd=1.30 n=5	6.00 1.41 4	3.00 0 1	5.50 2.38 4	4.00 1.89 20	4.59 1.78 41
Decimals 10. Carry out arithmetic computations involving dollars and cents	5.40 2.30 5	5.00 2.45 4	2.00 0 1	6.50 .58 4	6.10 .85 20	5.98 1.71 41
11. Read and write decimals in one or more places	6.80 .45 5	6.75 .50 4	5.00 0 1	6.75 .50 4	5.05 1.32 20	6.29 1.19 41
12. Round off decimals to one or more places	6.60 .55 5	6.50 .58 4	3.00 0 1	6.75 .50 4	4.45 1.32 20	5.90 1.30 41
13. Multiply and divide decimals in one or more places	6.40 .89 5	6.25 .96 4	5.00 0 1	6.75 .50 4	4.50 1.70 2.90	5.54 1.66 41
14. Add and subtract decimals in one or more places	6.60 .55 5	6.50 .58 4	5.00 0 1	6.75 .50 4	4.47 1.78 19	5.83 1.48 41
15. Solve word problems with decimals in one or more places	6.00 1.23 5	5.75 1.26 4	5.00 0 1	6.75 .50 4	4.05 1.75 19	4.93 1.56 41
Percent 16. Read and write percents	6.20 1.30 5	6.00 1.41 4	3.00 0 1	5.75 1.26 4	5.58 1.47 19	5.63 1.40 38
17. Compute percents	6.60 .55 5	6.50 .58 4	3.00 0 1	6.75 .50 4	5.50 1.20 18	5.28 1.72 39

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
9. Solve word problems with common fractions	x=5.50 sd=2.12 n=2	4.57 1.90 7	4.96 1.16 24	4.50 1.87 6	6.00 1.41 2	5.40 .89 5
Decimals						
10. Carry out arithmetic computations involving dollars and cents	3.00 1.41 2	5.29 1.25 7	5.63 1.10 24	6.17 1.17 6	3.50 2.12 2	6.40 .55 5
11. Read and write decimals in one or more places	6.50 .71 2	4.29 .95 7	5.50 1.32 24	5.17 1.33 6	6.50 .71 2	6.80 .45 5
12. Round off decimals to one or more places	6.00 0 2	3.71 .49 7	5.04 1.60 24	4.67 1.63 6	7.00 0 2	6.00 1.23 5
13. Multiply and divide decimals in one or more places	5.50 2.12 2	4.00 .82 7	5.25 1.51 24	4.67 1.63 6	7.00 0 2	6.00 1.23 5
14. Add and subtract decimals in one or more places	6.00 1.41 2	4.29 1.38 7	5.17 1.52 24	4.50 1.64 6	7.00 0 2	6.20 .84 5
15. Solve word problems with decimals in one or more places	6.00 1.41 2	3.86 1.07 7	4.92 1.14 24	4.33 1.86 6	4.50 2.12 2	6.00 .71 5
Percent						
16. Read and write percents	4.00 0 2	5.14 1.22 7	5.17 1.27 24	4.83 2.04 6	3.00 1.41 2	5.20 .45 5
17. Compute percents	3.50 .71 2	4.86 1.46 7	5.17 1.34 24	4.67 2.07 6	3.00 1.41 2	5.20 .45 5

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
9. Solve word problems with common fractions	x= 5.46 sd= 1.50 n=24	4.80 1.99 10	6.33 1.16 3	5.12 1.97 25	5.00 0 2	5.18 1.67 17
Decimals						
10. Carry out arithmetic computations involving dollars and cents	4.84 1.77 25	3.90 2.18 10	6.33 1.16 3	4.29 2.12 24	6.00 1.41 2	4.53 1.70 17
11. Read and write decimals in one or more places	6.56 .87 25	6.70 .48 10	6.33 .16 3	6.72 .61 25	6.00 1.41 2	4.94 1.89 17
12. Round off decimals to one or more places	6.56 .92 25	6.60 .70 10	6.00 1.73 3	6.56 .71 25	5.50 2.12 2	4.82 1.94 17
13. Multiply and divide decimals in one or more places	6.28 1.10 25	6.60 .70 10	6.00 1.73 3	6.68 .63 25	5.50 2.12 2	4.47 1.81 17
14. Add and subtract decimals in one or more places	6.50 .95 26	6.50 .85 10	6.33 1.16 3	6.72 .61 25	6.00 1.41 2	4.94 1.82 17
15. Solve word problems with decimals in one or more places	5.46 1.39 26	6.00 1.41 10	6.00 1.73 3	6.52 .96 25	4.00 0 2	4.29 1.72 17
Percent						
16. Read and write percents	5.27 1.40 26	6.30 .82 10	7.00 0 3	5.96 1.27 25	7.00 0 2	5.88 1.65 17
17. Compute percents	5.12 1.51 26	5.70 1.42 10	6.33 1.16 3	5.96 1.46 25	6.00 1.41 2	5.12 2.09 17

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
9. Solve word problems with common fractions	$\bar{x}$= 5.78 sd= 1.48 n=23	6.60 .55 5	4.56 1.39 25	7.00 0 2	3.00 1.20 8	7.00 0 1
Decimals						
10. Carry out arithmetic computations involving dollars and cents	4.74 1.76 23	5.80 1.10 5	5.39 1.65 26	3.50 2.12 2	6.88 .35 8	2.00 0 1
11. Read and write decimals in one or more places	6.87 .34 23	7.00 0 5	5.81 1.23 26	7.00 0 2	4.38 2.33 8	7.00 0 1
12. Round off decimals to one or more places	6.52 .73 23	7.00 0 5	5.42 1.42 26	5.50 2.12 2	3.75 1.83 8	7.00 0 1
13. Multiply and divide decimals in one or more places	6.57 .66 23	7.00 0 5	5.58 1.39 26	7.00 0 2	4.00 2.00 8	7.00 0 1
14. Add and subtract decimals in one or more places	6.74 .45 23	7.00 0 5	5.60 1.47 25	7.00 0 2	4.00 2.00 8	7.00 0 1
15. Solve word problems with decimals in one or more places	5.83 1.50 23	7.00 0 5	4.54 1.82 24	7.00 0 2	3.00 1.60 8	7.00 0 1
Percent						
16. Read and write percents	4.91 1.13 23	5.80 1.10 5	5.04 1.31 26	4.00 1.41 2	4.88 1.81 8	6.00 0 1
17. Compute percents	5.04 1.40 23	5.80 1.10 5	4.62 1.68 26	4.00 1.41 2	4.50 2.00 8	6.00 0 1

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
9. Solve word problems with common fractions	x̄=5.50 sd=1.38 n=6	6.00 1.41 4	4.42 1.68 12	5.00 2.83 2	2.00 0 1	6.00 0 1
Decimals 10. Carry out arithmetic computations involving dollars and cents	6.33 1.03 6	5.25 .50 4	5.75 1.77 12	6.50 .71 2	7.00 0 1	6.00 0 1
11. Read and write decimals in one or more places	6.33 .82 6	5.50 .58 4	5.00 1.95 12	6.00 1.41 2	4.00 0 1	5.00 0 1
12. Round off decimals to one or more places	6.33 .82 6	5.50 .58 4	4.83 1.85 12	5.50 2.12 2	2.00 0 1	5.00 0 1
13. Multiply and divide decimals in one or more places	6.17 1.17 6	5.25 .50 4	4.58 1.62 12	5.50 2.12 2	2.00 0 1	5.00 0 1
14. Add and subtract decimals in one or more places	6.33 .52 6	5.50 .58 4	4.83 1.75 12	5.50 2.12 2	2.00 0 1	5.00 0 1
15. Solve word problems with decimals in one or more places	6.33 .82 6	5.75 .96 4	4.42 1.68 12	5.00 2.83 2	2.00 0 1	6.00 0 1
Percent 16. Read and write percents	6.33 .82 6	5.00 .82 4	5.25 1.49 12	5.50 2.12 2	5.00 0 1	5.00 0 1
17. Compute percents	6.17 .98 6	4.75 .50 4	5.17 1.64 12	5.00 2.83 2	4.00 0 1	5.00 0 1

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
9. Solve word problems with common fractions	x=7.00 sd=0 n=1	3.67 2.31 3	3.75 3.20 4	4.95 1.74 300		4.85 1.78 589
Decimals 10. Carry out arithmetic computations involving dollars and cents	5.00 0 1	4.33 2.89 3	5.50 2.38 4	5.33 1.75 301		5.58 1.77 589
11. Read and write decimals in one or more places	5.00 0 1	5.00 3.46 3	5.25 2.87 4	5.96 1.41 302		5.71 1.59 594
12. Round off decimals to one or more places	5.00 0 1	5.00 3.46 3	3.75 3.20 4	5.63 1.57 302		5.46 1.71 594
13. Multiply and divide decimals in one or more places	5.00 0 1	5.00 3.46 3	4.00 2.45 4	5.59 1.59 302		5.38 1.76 594
14. Add and subtract decimals in one or more places	5.00 0 1	5.00 3.46 3	4.00 2.16 4	5.73 1.56 301		5.50 1.70 596
15. Solve word problems with decimals in one or more places	5.00 0 1	5.00 3.46 3	3.50 2.89 4	5.13 1.70 300		5.00 1.79 592
Percent 16. Read and write percents	6.00 0 1	5.00 3.46 3	4.50 2.38 4	5.42 1.43 299		5.50 1.51 593
17. Compute percents	6.00 0 1	5.00 3.46 3	4.25 2.75 4	5.24 1.60 299		5.23 1.71 594

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	x= 5.60 sd= 1.40 n=15	4.94 1.65 16	4.67 1.86 6	3.50 .71 2	7.00 0 1	5.13 1.60 40
19. Solve word problems by selecting and using correct order of operations	5.47 1.36 15	5.60 1.20 15	5.50 1.23 6	4.00 1.41 2	7.00 0 1	5.49 1.32 39
20. Perform written calculations quickly	5.20 1.61 15	5.31 1.20 16	5.00 1.41 6	4.50 .71 2	7.00 0 1	5.23 1.37 40
21. Compute averages	5.20 1.21 15	4.75 1.53 16	5.17 1.84 6	5.00 1.41 2	7.00 0 1	5.05 1.43 40
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.40 .51 15	6.19 1.28 16	6.17 .98 6	6.00 1.41 2	7.00 0 1	6.28 .96 40
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	6.00 1.31 15	5.94 1.34 16	5.83 1.17 6	6.50 .71 2	7.00 0 1	6.00 1.24 40
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	4.80 1.78 15	4.75 2.02 16	4.33 2.07 6	3.00 1.41 2	7.00 0 1	4.68 1.90 40
25. Perform basic metric conversions involving weight, distance, and volume	4.33 1.45 15	4.06 1.77 16	4.00 2.10 6	3.00 0 2	7.00 0 1	4.18 1.68 40

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative	Accounting and Computer Occupations	Business Data Processing Systems
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=6.50 sd= .71 n=2	6.00 .82 4	7.00 0 1	5.63 1.21 19	6.57 .54 7	5.75 1.46 28
19. Solve word problems by selecting and using correct order of operations	7.00 0 2	6.00 1.41 4	7.00 0 1	5.74 .99 19	6.57 .54 7	6.21 1.10 28
20. Perform written calculations quickly	6.00 1.41 2	6.00 1.16 4	7.00 0 1	5.90 1.15 19	6.43 .79 7	5.32 1.83 28
21. Compute averages	5.50 .71 2	5.75 .50 4	6.00 0 1	5.58 1.17 19	6.43 .79 7	5.93 1.36 28
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.00 0 2	6.00 0 4	6.00 0 1	5.05 1.62 19	4.14 .69 7	4.07 1.72 28
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	6.00 0 2	6.00 0 4	6.00 0 1	4.58 1.74 19	2.29 1.38 7	2.75 1.58 28
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	5.50 .71 2	5.75 .50 4	5.00 0 1	3.84 1.74 19	2.29 1.38 7	2.63 1.45 27
25. Perform basic metric conversions involving weight, distance, and volume	5.50 .71 2	5.25 .96 4	5.00 0 1	3.58 1.54 19	2.71 1.38 7	2.89 1.42 28

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROBRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=5.71 sd=1.60 n=7	7.00 0 1	5.00 0 1	4.00 0 1	5.73 1.37 26	5.47 1.55 15
19. Solve word problems by selecting and using correct order of operations	6.14 1.46 7	7.00 0 1	5.00 0 1	4.00 0 1	5.04 1.76 26	5.13 1.51 15
20. Perform written calculations quickly	5.14 1.95 7	7.00 0 1	6.00 0 1	4.00 0 1	5.54 1.73 26	5.73 1.39 15
21. Compute averages	5.57 1.51 7	7.00 0 1	5.00 0 1	5.00 0 1	5.39 1.70 26	5.47 1.46 15
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	3.71 1.98 7	5.00 0 1	5.00 0 1	7.00 0 1	4.92 1.72 26	5.07 1.67 15
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	3.43 2.37 7	4.00 0 1	5.00 0 1	5.00 0 1	3.46 1.92 26	4.33 1.68 15
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	3.43 2.37 7	4.00 0 1	5.00 0 1	5.00 0 1	3.15 1.93 26	3.60 1.72 15
25. Perform basic metric conversions involving weight, distance, and volume	3.57 2.15 7	3.00 0 1	4.00 0 1	4.00 0 1	3.04 1.71 26	3.53 1.69 15

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=4.67 sd=2.08 n=3	4.67 .58 3	5.00 0 1	6.60 .89 5	5.63 1.51 8	5.73 1.35 132
19. Solve word problems by selecting and using correct order of operations	5.00 2.00 3	4.67 1.53 3	5.00 0 1	6.40 .89 5	4.63 2.07 8	5.64 1.47 132
20. Perform written calculations quickly	5.00 2.65 3	4.67 1.53 3	7.00 0 1	6.00 1.23 5	5.38 2.00 8	5.61 1.58 132
21. Compute averages	4.33 3.06 3	4.67 1.53 3	5.00 0 1	6.40 .89 5	5.25 1.91 8	5.61 1.44 132
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	5.67 1.53 3	4.00 1.73 3	5.00 0 1	5.80 1.10 5	5.14 1.35 7	4.79 1.63 131
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.00 2.00 3	3.33 1.16 3	4.00 0 1	4.80 1.92 5	4.13 1.81 8	3.80 1.88 132
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	4.67 2.52 3	2.33 1.53 3	4.00 0 1	3.60 1.52 5	3.13 1.73 8	3.37 1.79 131
25. Perform basic metric conversions involving weight, distance, and volume	4.00 3.00 3	2.00 1.73 3	5.00 0 1	3.20 1.30 5	3.13 1.81 8	3.31 1.65 132

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS HEALTH OCCUPATIONS Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=2.67 sd=2.08 n=3	5.50 2.11 12	3.94 2.18 18	4.00 1.00 3	4.67 2.52 3	4.67 2.31 3
19. Solve word problems by selecting and using correct order of operations	3.00 2.00 3	5.58 2.11 12	4.28 2.24 18	4.00 1.41 2	4.67 2.52 3	4.67 2.31 3
20. Perform written calculations quickly	5.67 1.53 3	4.83 1.90 12	4.17 2.09 18	4.67 1.53 3	4.67 2.52 3	4.67 2.31 3
21. Compute averages	4.00 2.05 3	4.18 1.89 11	3.50 1.98 18	4.00 1.00 3	3.00 2.65 3	4.67 2.31 3
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	5.33 1.53 3	6.17 1.53 12	5.83 1.58 18	7.00 0 3	7.00 0 3	5.00 2.65 3
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	4.00 2.65 3	5.58 1.78 12	5.00 1.97 18	7.00 0 3	5.67 2.31 3	6.67 .58 3
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	4.00 2.65 3	5.33 1.97 12	5.47 1.74 17	7.00 0 3	7.00 0 3	6.67 .58 3
25. Perform basic metric conversions involving weight, distance, and volume	4.00 2.65 3	5.25 2.09 12	5.50 1.72 18	5.67 1.16 3	6.33 1.16 3	6.67 .58 3

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
Mixed Operations					
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=3.00 sd=0 n=1	5.75 1.75 8	7.00 0 1	2.40 1.67 5	4.44 2.19 57
19. Solve word problems by selecting and using correct order of operations	3.00 0 1	5.88 1.36 8	7.00 0 1	3.60 2.07 5	4.71 2.11 56
20. Perform written calculations quickly	3.00 0 1	5.25 2.32 8	7.00 0 1	3.40 2.30 5	4.58 2.04 57
21. Compute averages	3.00 0 1	4.31 2.45 8	7.00 0 1	2.00 1.16 4	3.80 2.03 55
Measurement and calculation					
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	5.00 0 1	6.50 .93 8	7.00 0 1	5.40 2.07 5	6.02 1.51 57
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.00 0 1	5.25 1.39 8	7.00 0 1	4.20 1.92 5	5.30 1.82 57
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	5.00 0 1	5.88 .81 8	7.00 0 1	4.80 2.68 5	5.61 1.85 56
25. Perform basic metric conversions involving weight, distance, and volume	3.00 0 1	5.88 2.10 8	7.00 0 1	4.60 2.88 5	5.44 1.94 57

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS: HOME ECONOMICS OCCUPATIONS: Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$= 2.86 sd= 1.49 n=22	4.00 2.31 4	5.00 1.67 19	3.38 2.20 8	4.00 2.83 2	2.63 2.07 8
19. Solve word problems by selecting and using correct order of operations	3.36 1.59 22	4.00 2.45 4	5.35 1.81 20	3.50 1.77 8	4.50 3.54 2	3.00 2.39 8
20. Perform written calculations quickly	3.36 1.40 22	4.25 2.06 4	5.40 1.39 20	3.63 1.92 8	4.00 2.83 2	3.25 1.75 8
21. Compute averages	3.55 1.92 22	3.50 1.92 4	4.70 1.84 20	3.38 1.85 8	4.00 2.83 2	3.63 2.33 8
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	5.41 1.65 22	6.75 .50 4	6.90 .45 20	6.25 .89 8	6.50 .71 2	5.50 1.60 8
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	4.59 1.53 22	5.50 2.38 4	6.85 .49 20	4.88 1.73 8	4.50 3.54 2	4.25 1.83 8
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	3.91 1.80 22	3.50 2.38 4	4.95 2.19 20	3.88 1.64 8	1.50 .71 2	3.88 2.30 8
25. Perform basic metric conversions involving weight, distance, and volume	2.91 1.76 21	3.25 2.63 4	4.40 2.21 20	3.00 1.85 8	1.00 0 2	3.50 2.20 8

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=5.00 sd=2.83 n=2	3.69 1.99 65				
19. Solve word problems by selecting and using correct order of operations	5.00 2.83 2	4.06 2.05 66				
20. Perform written calculations quickly	4.50 3.54 2	4.11 1.81 66				
21. Compute averages	4.00 4.24 2	3.91 2.00 66				
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	5.50 2.12 2	6.09 1.36 66				
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.00 2.83 2	5.33 1.78 66				
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	4.50 3.54 2	4.14 2.06 66				
25. Perform basic metric conversions involving weight, distance, and volume	4.00 4.24 2	3.45 2.13 65				

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=6.40 sd= .89 n=5	6.25 .96 4	5.00 0 1	6.00 .82 4	4.32 1.57 19	5.12 1.71 41
19. Solve word problems by selecting and using correct order of operations	6.40 1.34 5	6.25 1.50 4	3.00 0 1	5.50 1.29 4	4.37 1.74 19	4.61 1.64 41
20. Perform written calculations quickly	6.20 1.30 5	6.00 1.41 4	3.00 0 1	5.75 .96 4	4.58 1.84 19	4.68 1.46 40
21. Compute averages	6.00 1.23 5	5.75 1.26 4	3.00 0 1	5.25 2.22 4	4.16 1.83 19	4.63 1.56 41
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.40 1.34 5	6.25 1.50 4	2.00 0 1	7.00 0 4	5.47 1.54 19	5.98 1.64 41
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	6.60 .89 5	6.50 1.00 4	1.00 0 1	6.50 1.00 4	5.21 1.81 19	5.70 1.70 40
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	6.20 1.30 5	6.00 1.41 4	1.00 0 1	6.50 1.00 4	4.42 2.06 19	5.29 1.59 41
25. Perform basic metric conversions involving weight, distance, and volume	5.00 1.58 5	4.50 1.29 4	1.00 0 1	6.25 .96 4	4.05 1.93 19	4.51 1.69 41

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=6.00 sd=0 n=2	4.43 1.27 7	5.00 1.32 24	5.67 1.63 6	7.00 0 2	5.00 1.87 5
19. Solve word problems by selecting and using correct order of operations	4.00 1.41 2	4.86 1.87 7	5.08 1.18 24	5.00 1.90 6	3.50 3.54 2	5.60 1.52 5
20. Perform written calculations quickly	3.00 0 2	4.29 1.50 7	4.96 1.23 24	5.00 1.67 6	5.00 1.41 2	4.80 1.64 5
21. Compute averages	3.50 .71 2	3.57 .98 7	4.13 1.30 24	4.67 1.51 6	5.50 .71 2	4.60 1.14 5
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	7.00 0 2	6.14 1.22 7	6.08 1.02 24	6.33 1.21 6	4.00 4.24 2	6.60 .55 5
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.50 2.12 2	6.00 1.83 7	5.92 1.10 24	6.00 1.27 6	5.50 2.12 2	6.20 .84 5
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	2.50 2.12 2	4.00 2.38 7	3.54 1.53 24	3.83 1.17 6	5.50 2.12 2	6.00 1.23 5
25. Perform basic metric conversions involving weight, distance, and volume	2.00 1.41 2	3.43 1.72 7	3.13 1.30 24	3.17 1.17 6	6.50 .71 2	5.60 1.14 5

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=5.96 sd=1.25 n-26	5.30 1.34 10	6.00 1.73 3	5.79 1.69 24	5.50 2.12 2	5.29 1.61 17
19. Solve word problems by selecting and using correct order of operations	5.54 1.36 26	6.40 .84 10	6.67 .58 3	6.44 1.12 25	6.00 0 2	4.65 1.84 17
20. Perform written calculations quickly	5.69 .97 26	5.90 1.29 10	5.67 1.16 3	6.04 1.46 25	6.00 1.41 2	5.53 1.23 17
21. Compute averages	4.89 1.42 26	4.80 1.55 10	5.33 1.53 3	5.52 1.74 25	6.00 1.41 2	3.88 2.00 17
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.27 1.34 26	6.40 .84 10	6.00 1.00 3	5.76 1.67 25	6.00 1.41 2	6.12 1.50 17
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.81 1.47 26	5.20 1.87 10	5.33 1.53 3	4.48 1.78 25	2.50 2.12 2	5.59 1.81 17
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	5.19 1.52 26	4.30 1.57 10	5.00 2.00 3	4.64 1.78 25	2.00 1.41 2	4.71 1.83 17
25. Perform basic metric conversions involving weight, distance, and volume	4.81 1.67 26	3.44 .73 9	4.33 1.16 3	4.64 1.80 25	2.00 1.41 2	3.41 1.54 ·17

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$= 6.52 sd= .59 n=23	6.60 .55 5	5.08 1.52 26	7.00 0 2	3.50 1.60 8	7.00 0 1
19. Solve word problems by selecting and using correct order of operations	5.65 1.40 23	6.40 .89 5	4.65 1.81 26	6.50 .71 2	3.13 1.64 8	7.00 0 1
20. Perform written calculations quickly	5.91 1.20 23	5.80 1.10 5	4.73 1.69 26	6.50 .71 2	4.38 2.07 8	6.00 0 1
21. Compute averages	4.44 1.27 23	4.80 1.92 5	4.35 1.74 26	5.00 2.83 2	3.50 2.00 8	6.00 0 1
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.04 1.19 23	6.60 .55 5	6.15 .88 26	5.00 2.83 2	5.25 1.75 8	7.00 0 1
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.57 1.50 23	5.60 1.34 5	5.69 1.26 26	5.50 2.12 2	4.88 1.55 8	7.00 0 1
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	4.65 1.50 23	5.00 1.41 5	4.46 1.61 26	4.00 0 2	3.63 1.30 8	6.00 0 1
25. Perform basic metric conversions involving weight, distance, and volume	4.57 1.38 23	4.80 1.30 5	3.96 1.64 26	3.50 .71 2	2.83 1.4[illegible] 6	6.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$=6.00 sd=1.27 n=6	5.67 .58 3	4.75 1.66 12	5.00 2.83 2	2.00 0 1	5.00 0 1
19. Solve word problems by selecting and using correct order of operations	6.00 1.10 6	6.25 .96 4	5.00 1.71 12	5.00 2.83 2	5.00 0 1	6.00 0 1
20. Perform written calculations quickly	6.00 .89 6	5.50 1.29 4	4.92 1.73 12	4.50 3.54 2	2.00 0 1	3.00 0 1
21. Compute averages	5.67 1.03 6	4.75 .50 4	4.17 1.27 12	4.00 4.24 2	4.00 0 1	5.00 0 1
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	6.17 .75 6	5.50 1.29 4	5.25 1.55 12	5.50 2.12 2	5.00 0 1	5.00 0 1
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	5.83 1.17 6	5.25 1.26 4	5.25 1.55 12	5.00 2.83 2	5.00 0 1	3.00 0 1
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	5.67 1.75 6	3.50 2.08 4	3.58 1.83 12	4.50 3.54 2	4.00 0 1	3.00 0 1
25. Perform basic metric conversions involving weight, distance, and volume	5.50 1.98 6	3.25 1.71 4	3.50 1.88 12	4.00 4.24 2	3.00 0 1	3.00 0 1

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
Mixed Operations						
18. Convert fractions to decimals, percents to fractions, fractions to percents, percents to decimals, decimals to percents, common fractions or mixed numbers to decimal fractions, and decimal fractions to common fractions or mixed numbers	$\bar{x}$-5.00 sd=0 n-1	3.67 2.31 3	4.25 2.36 4	5.35 1.59 300		5.15 1.76 594
19. Solve word problems by selecting and using correct order of operations	6.00 0 1	3.67 2.31 3	3.25 2.63 4	5.18 1.69 302		5.13 1.77 595
20. Perform written calculations quickly	5.00 0 1	2.33 1.16 3	3.50 2.08 4	5.16 1.56 301		5.09 1.69 596
21. Compute averages	5.00 0 1	5.00 3.46 3	3.75 2.50 4	4.58 1.64 302		4.70 1.77 595
Measurement and calculation						
22. Read numbers or symbols from time, weight, distance, and volume measuring scales	7.00 0 1	3.67 .58 3	6.00 .82 4	5.96 1.39 302		5.74 1.52 596
23. Use a measuring device to determine an object's weight, distance, or volume in standard (English) units	7.00 0 1	3.00 1.73 3	5.25 1.71 4	5.49 1.61 301		5.11 1.84 596
24. Use a measuring device to determine an object's weight, distance, or volume in metric units	2.00 0 1	3.00 1.73 3	4.50 2.52 4	4.59 1.78 302		4.37 1.93 595
25. Perform basic metric conversions involving weight, distance, and volume	2.00 0 1	3.00 1.73 3	4.00 2.58 4	4.12 1.74 299		4.00 1.87 593

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
26. Solve problems involving time, weight, distance, and volume	x̄= 5.47 sd= 1.30 n=15	5.44 1.21 16	4.33 .82 6	4.00 0 2	7.00 0 1	5.25 1.26 40
27. Use a calculator to perform basic arithmetic operations to solve problems	4.53 1.89 15	5.69 1.14 16	5.33 1.03 6	5.00 0 2	7.00 0 1	5.20 1.51 40
Estimation 28. Determine if a solution to a mathematical problem is reasonable	5.73 1.49 15	5.94 1.06 16	5.00 .63 6	5.50 2.12 2	7.00 0 1	5.73 1.24 40
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	5.13 1.25 15	5.13 1.75 16	5.17 1.60 6	5.50 .71 2	6.00 0 1	5.18 1.45 40
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	4.73 1.53 15	4.56 1.93 16	4.67 1.97 6	5.50 .71 2	5.00 0 1	4.70 1.68 40
3. Use appropriate abbreviations of words in writing and speaking	5.67 1.23 15	5.13 1.31 16	5.00 1.27 6	6.00 0 2	6.00 0 1	5.38 1.23 40
4. Use words appropriately which mean the same as other words but are spelled differently	4.40 1.35 15	4.69 1.49 16	4.33 1.37 6	4.50 2.12 2	4.00 0 1	4.50 1.38 40
5. Use words correctly which sound the same as other words but that have different meanings and spellings	4.27 1.34 15	4.56 1.50 16	4.33 1.21 6	4.00 0 2	5.00 0 1	4.40 1.32 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$=6.00 sd=0 n=2	5.75 .50 4	6.00 0 1	4.05 1.68 19	3.57 1.51 7	4.11 1.55 28
27. Use a calculator to perform basic arithmetic operations to solve problems	5.50 2.12 2	5.75 1.50 4	7.00 0 1	5.58 .96 19	6.86 .38 7	6.18 .98 28
Estimation 28. Determine if a solution to a mathematical problem is reasonable	6.00 1.41 2	6.00 .82 4	7.00 0 1	5.79 1.08 19	7.00 0 7	6.52 .98 27
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	6.00 1.41 2	6.00 1.16 4	7.00 0 1	5.74 .99 19	5.43 1.13 7	4.68 1.31 28
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.50 2.12 2	5.25 1.26 4	7.00 0 1	5.00 1.29 19	4.71 1.11 7	4.26 1.38 27
3. Use appropriate abbreviations of words in writing and speaking	7.00 0 2	5.50 .73 4	7.00 0 1	4.74 1.70 19	5.57 1.27 7	5.04 1.19 27
4. Use words appropriately which mean the same as other words but are spelled differently	5.50 2.12 2	5.75 1.26 4	7.00 0 1	4.90 1.20 19	5.14 1.22 7	4.11 1.81 27
5. Use words correctly which sound the same as other words but that have different meanings and spellings	6.50 .71 2	6.25 .96 4	7.00 0 1	5.21 1.27 19	4.57 1.72 7	4.21 1.52 28

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
26. Solve problems involving time, weight, distance, and volume	x=4.29 sd=2.29 n=7	3.00 0 1	5.00 0 1	6.00 0 1	3.92 1.90 26	4.20 1.70 15
27. Use a calculator to perform basic arithmetic operations to solve problems	5.86 1.22 7	7.00 0 1	7.00 0 1	7.00 0 1	6.69 .68 26	5.87 1.19 15
Estimation 28. Determine if a solution to a mathematical problem is reasonable	6.00 1.16 7	7.00 0 1	5.00 0 1	5.00 0 1	5.92 1.53 24	5.36 1.39 14
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	4.00 2.08 7	6.00 0 1	7.00 0 1	7.00 0 1	6.65 .75 26	6.07 1.10 15
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	4.00 2.08 7	7.00 0 1	7.00 0 1	7.00 0 1	6.56 .77 25	5.87 1.19 15
3. Use appropriate abbreviations of words in writing and speaking	4.57 1.90 7	7.00 0 1	7.00 0 1	7.00 0 1	6.42 .90 26	5.73 1.10 15
4. Use words appropriately which mean the same as other words but are spelled differently	3.29 2.36 7	7.00 0 1	7.00 0 1	5.00 0 1	6.42 .90 26	5.87 1.30 15
5. Use words correctly which sound the same as other words but that have different meanings and spellings	3.57 2.15 7	7.00 0 1	7.00 0 1	7.00 0 1	6.73 .72 26	6.27 1.10 15

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$=4.67 sd=2.52 n=3	2.33 1.53 3	6.00 0 1	4.80 1.79 5	4.38 2.20 8	4.19 1.75 132
27. Use a calculator to perform basic arithmetic operations to solve problems	5.00 2.65 3	6.33 .58 3	6.00 0 1	7.00 0 5	6.25 1.04 8	6.19 1.06 132
Estimation 28. Determine if a solution to a mathematical problem is reasonable	4.67 3.22 3	4.67 1.53 3	6.00 0 1	5.60 1.67 5	5.43 2.07 7	5.94 1.37 127
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	6.00 1.00 3	6.33 .58 3	6.00 0 1	6.60 .55 5	6.38 1.19 8	5.76 1.35 132
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.67 1.16 3	6.33 .58 3	5.00 0 1	6.80 .45 5	6.13 1.25 8	5.44 1.50 130
3. Use appropriate abbreviations of words in writing and speaking	6.33 .58 3	6.33 .58 3	5.00 0 1	6.20 1.30 5	5.50 1.41 8	5.59 1.32 131
4. Use words appropriately which mean the same as other words but are spelled differently	4.67 1.16 3	6.33 .58 3	6.00 0 1	6.80 .45 5	6.25 1.17 8	5.35 1.66 131
5. Use words correctly which sound the same as other words but that have different meanings and spellings	4.33 2.08 3	6.33 .58 3	6.00 0 1	6.80 .45 5	6.63 1.06 8	5.56 1.65 132

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$=4.00 sd=2.65 n=3	4.67 1.92 12	4.67 2.17 18	5.00 2.00 3	4.67 2.52 3	6.67 .58 3
27. Use a calculator to perform basic arithmetic operations to solve problems	6.00 1.00 3	3.17 1.95 12	3.11 2.08 18	3.33 1.53 3	2.67 2.08 3	4.67 2.08 3
Estimation 28. Determine if a solution to a mathematical problem is reasonable	4.00 2.83 2	5.50 2.07 12	4.22 2.37 18	5.00 1.00 3	5.67 1.53 3	5.33 2.08 3
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	6.00 1.00 3	5.75 1.14 12	5.83 1.30 18	5.00 1.00 3	6.00 1.00 3	7.00 0 3
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	6.00 1.00 3	5.17 1.90 12	5.17 1.51 18	5.00 1.00 3	5.67 .58 3	7.00 0 3
3. Use appropriate abbreviations of words in writing and speaking	6.33 .58 3	6.33 .99 12	5.94 1.31 18	5.67 1.53 3	7.00 0 3	7.00 0 3
4. Use words appropriately which mean the same as other words but are spelled differently	6.33 .58 3	6.25 .97 12	5.72 1.32 18	4.67 .58 3	6.33 1.16 3	7.00 0 3
5. Use words correctly which sound the same as other words but that have different meanings and spellings	6.33 .58 3	5.92 1.51 12	5.50 1.30 18	4.67 .58 3	7.00 0 3	6.00 1.73 3

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS	
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$=3.00 sd=0 n=1	4.88 1.81 8	7.00 0 1	3.80 2.17 5	4.72 2.00 57	
27. Use a calculator to perform basic arithmetic operations to solve problems	3.00 0 1	4.38 1.60 8	7.00 0 1	2.40 1.67 5	3.53 1.99 57	
Estimation 28. Determine if a solution to a mathematical problem is reasonable	3.00 0 1	5.50 1.20 8	7.00 0 1	3.60 2.07 5	4.82 2.04 56	
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	6.00 0 1	5.75 1.17 8	6.00 0 1	4.80 .84 5	5.75 1.14 57	
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	6.00 0 1	5.63 1.30 8	5.00 0 1	4.60 1.14 5	5.35 1.43 57	
3. Use appropriate abbreviations of words in writing and speaking	6.00 0 1	6.00 1.07 8	6.00 0 1	5.80 1.10 5	6.14 1.08 57	
4. Use words appropriately which mean the same as other words but are spelled differently	6.00 0 1	5.25 1.28 8	4.00 0 1	5.20 .84 5	5.77 1.18 57	
5. Use words correctly which sound the same as other words but that have different meanings and spellings	6.00 0 1	5.50 1.51 8	5.00 0 1	4.80 .84 5	5.63 1.30 57	

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
26. Solve problems involving time, weight, distance, and volume	x= 3.86 sd= 1.46 n=22	4.25 2.22 4	5.65 1.23 20	3.63 1.19 8	3.50 3.54 2	3.25 1.49 8
27. Use a calculator to perform basic arithmetic operations to solve problems	3.82 1.82 22	3.25 2.06 4	4.65 2.01 20	4.25 1.75 8	2.00 1.41 2	4.13 1.55 8
Estimation 28. Determine if a solution to a mathematical problem is reasonable	3.67 1.46 21	4.25 2.22 4	5.63 1.30 19	3.75 1.17 8	4.50 3.54 2	3.13 1.36 8
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	6.27 .94 22	5.75 .50 4	5.42 1.35 19	5.50 1.07 8	6.00 0 2	6.50 .76 8
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.91 1.19 22	5.50 1.29 4	5.00 1.80 19	4.38 1.06 8	5.50 2.12 2	6.38 .74 8
3. Use appropriate abbreviations of words in writing and speaking	5.36 1.59 22	6.00 1.41 4	6.25 1.02 20	4.25 .89 8	5.50 2.12 2	5.38 1.41 8
4. Use words appropriately which mean the same as other words but are spelled differently	6.14 1.04 22	4.50 2.08 4	5.00 1.86 20	4.38 1.51 8	4.50 3.54 2	6.25 .89 8
5. Use words correctly which sound the same as other words but that have different meanings and spellings	5.91 1.27 22	5.00 2.16 4	5.05 1.61 20	3.88 1.25 8	4.50 3.54 2	6.13 1.13 8

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$=4.50 sd=3.54 n=2	4.33 1.72 66				
27. Use a calculator to perform basic arithmetic operations to solve problems	4.50 3.54 2	4.09 1.89 66				
Estimation 28. Determine if a solution to a mathematical problem is reasonable	4.00 4.24 2	4.27 1.77 64				
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	5.50 .71 2	5.89 1.09 65				
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.00 0 2	5.45 1.45 65				
3. Use appropriate abbreviations of words in writing and speaking	6.00 0 2	5.56 1.41 66				
4. Use words appropriately which mean the same as other words but are spelled differently	4.00 0 2	5.38 1.63 66				
5. Use words correctly which sound the same as other words but that have different meanings and spellings	3.50 2.12 2	5.26 1.63 66				

	VOCATIONAL TRAINING AREAS ANS PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
MATHEMATICS SKILLS (continued)	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
26. Solve problems involving time, weight, distance, and volume	x=5.60 sd=1.67 n=5	5.25 1.71 4	1.00 0 1	5.50 1.29 4	4.11 1.91 19	4.56 1.57 41
27. Use a calculator to perform basic arithmetic operations to solve problems	6.20 1.79 5	6.00 2.00 4	1.00 0 1	4.67 2.31 3	4.42 1.95 19	4.05 1.77 41
Estimation 28. Determine if a solution to a mathematical problem is reasonable	6.00 1.41 4	5.67 1.53 3	2.00 0 1	6.25 .96 4	4.26 1.79 19	4.69 1.84 39
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	5.60 1.34 5	5.75 1.50 4	3.00 0 1	5.25 2.22 4	4.35 1.50 20	4.61 1.67 41
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	4.20 1.30 5	4.00 1.41 4	3.00 0 1	5.25 2.22 4	4.20 1.64 20	4.25 1.71 40
3. Use appropriate abbreviations of words in writing and speaking	5.20 1.92 5	5.25 2.22 4	3.00 0 1	5.25 2.22 4	4.80 1.51 20	5.37 1.41 41
4. Use words appropriately which mean the same as other words but are spelled differently	4.60 1.67 5	4.50 1.92 4	3.00 0 1	5.25 2.22 4	4.30 1.49 20	4.66 1.54 41
5. Use words correctly which sound the same as other words but that have different meanings and spellings	4.80 1.92 5	4.75 2.22 4	3.00 0 1	5.25 2.22 4	4.25 1.48 20	4.73 1.66 41

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS INDUSTRIAL OCCUPATIONS Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
26. Solve problems involving time, weight, distance, and volume	x=5.00 sd=1.41 n=2	6.14 .90 7	4.79 1.47 24	5.17 1.33 6	5.00 1.41 2	6.00 1.23 5
27. Use a calculator to perform basic arithmetic operations to solve problems	2.50 .71 2	3.86 1.46 7	3.96 1.68 24	5.00 1.79 6	6.00 0 2	4.20 1.79 5
Estimation 28. Determine if a solution to a mathematical problem is reasonable	5.50 2.12 2	4.57 1.27 7	5.42 1.21 24	6.00 .89 6	6.00 0 2	5.40 .89 5
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	3.00 1.41 2	6.00 1.16 7	4.63 1.01 24	5.33 1.03 6	3.50 .71 2	5.60 .55 5
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	1.50 .71 2	5.14 1.35 7	4.00 1.10 24	4.33 1.75 6	3.50 .71 2	4.80 .84 5
3. Use appropriate abbreviations of words in writing and speaking	5.00 2.83 2	5.71 1.11 7	5.17 .96 24	5.67 1.03 6	4.50 2.12 2	6.00 .71 5
4. Use words appropriately which mean the same as other words but are spelled differently	2.00 1.41 2	5.71 1.11 7	4.42 1.10 24	4.17 1.60 6	3.50 .71 2	5.00 .71 5
5. Use words correctly which sound the same as other words but that have different meanings and spellings	2.50 2.12 2	5.86 1.07 7	4.13 1.08 24	4.50 1.87 6	3.50 .71 2	5.00 1.00 5

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
MATHEMATICS SKILLS (continued)	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
26. Solve problems involving time, weight, distance, and volume	$\bar{x}$= 4.89 sd= 1.14 n=26	5.40 1.84 10	6.00 1.00 3	4.96 1.84 25	5.00 1.41 2	4.35 1.73 17
27. Use a calculator to perform basic arithmetic operations to solve problems	5.81 1.27 26	5.80 1.32 10	4.33 1.16 3	6.44 1.00 25	5.00 2.83 2	4.53 2.27 17
Estimation 28. Determine if a solution to a mathematical problem is reasonable	5.92 1.16 26	6.20 1.23 10	6.00 1.00 3	6.60 .65 25	6.00 1.41 2	6.13 1.20 16
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	4.77 1.42 26	5.10 .99 10	4.67 1.16 3	4.84 1.18 25	4.00 2.83 2	4.65 1.54 17
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	3.96 1.25 26	4.40 .84 10	4.33 .58 3	4.24 1.27 25	3.50 2.12 2	4.65 1.41 17
3. Use appropriate abbreviations of words in writing and speaking	6.08 1.13 26	5.80 1.23 10	4.00 0 3	5.67 1.27 24	5.50 2.12 2	5.06 1.48 16
4. Use words appropriately which mean the same as other words but are spelled differently	4.69 1.49 26	5.10 .88 10	4.33 .58 3	4.56 1.23 25	3.00 1.41 2	4.35 1.12 [illegible]
5. Use words correctly which sound the same as other words but that have different meanings and spellings	4.72 1.51 25	4.70 1.16 10	4.00 1.00 3	4.60 1.47 25	2.00 1.41 2	4.53 1.55 17

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
MATHEMATICS SKILLS (continued)	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
26. Solve problems involving time, weight, distance, and volume	x= 4.83 sd= 1.34 n=23	5.00 1.23 5	4.73 1.80 26	5.00 0 2	2.71 1.25 7	7.00 0 1
27. Use a calculator to perform basic arithmetic operations to solve problems	5.52 1.65 23	5.00 1.87 5	4.62 1.75 26	6.00 1.41 2	3.75 1.98 8	7.00 0 1
Estimation 28. Determine if a solution to a mathematical problem is reasonable	6.00 1.24 23	6.00 1.23 5	4.62 1.81 26	7.00 0 2	3.63 2.13 8	6.00 0 1
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	4.44 1.12 23	4.20 1.48 5	4.04 1.54 26	5.00 1.41 2	6.00 .76 8	4.00 0 1
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	4.19 1.21 21	4.20 1.48 5	3.54 1.36 26	5.00 0 1	5.25 1.39 8	4.00 0 1
3. Use appropriate abbreviations of words in writing and speaking	4.91 1.20 23	5.40 1.14 5	4.77 1.45 26	4.50 2.12 2	4.13 1.64 8	6.00 0 1
4. Use words appropriately which mean the same as other words but are spelled differently	4.52 1.08 23	4.00 1.23 5	3.69 1.44 26	5.00 1.41 2	4.50 1.69 8	4.00 0 1
5. Use words correctly which sound the same as other words but that have different meanings and spellings	4.44 1.20 23	4.00 1.23 5	3.54 1.45 26	5.00 1.41 2	5.25 1.67 8	4.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
MATHEMATICS SKILLS (continued)	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
26. Solve problems involving time, weight, distance, and volume	x=5.67 sd=1.51 n=6	5.25 1.50 4	3.83 1.27 12	4.50 3.54 2	4.00 0 1	3.00 0 1
27. Use a calculator to perform basic arithmetic operations to solve problems	5.60 .89 5	5.00 .82 4	4.92 1.88 12	4.50 3.54 2	5.00 0 1	6.00 0 1
Estimation 28. Determine if a solution to a mathematical problem is reasonable	5.67 1.21 6	5.75 .96 4	4.83 1.47 12	4.00 4.24 2	5.00 0 1	4.00 0 1
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	5.83 .98 6	4.75 .96 4	5.25 1.06 12	5.50 .71 2	6.00 0 1	6.00 0 1
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.50 1.05 6	4.00 2.16 4	4.83 1.12 12	5.00 0 2	2.00 0 1	6.00 0 1
3. Use appropriate abbreviations of words in writing and speaking	5.83 .98 6	4.50 2.38 4	5.00 1.41 12	6.00 0 2	2.00 0 1	6.00 0 1
4. Use words appropriately which mean the same as other words but are spelled differently	5.17 1.17 6	4.25 2.22 4	4.50 1.31 12	4.00 0 2	2.00 0 1	6.00 0 1
5. Use words correctly which sound the same as other words but that have different meanings and spellings	5.67 1.21 6	4.00 2.16 4	4.83 1.27 12	3.50 2.12 2	2.00 0 1	6.00 0 1

MATHEMATICS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
26. Solve problems involving time, weight, distance, and volume	x=6.00 sd=0 n=1	3.00 1.73 3	3.75 2.22 4	4.73 1.63 301		4.60 1.71 596
27. Use a calculator to perform basic arithmetic operations to solve problems	5.00 0 1	3.00 1.73 3	4.25 2.22 4	4.86 1.84 300		4.97 1.87 595
Estimation 28. Determine if a solution to a mathematical problem is reasonable	6.00 0 1	3.67 2.31 3	4.00 2.45 4	5.36 1.63 297		5.34 1.68 584
COMMUNICATIONS SKILLS						
Words and Meanings 1. Use plural words appropriately in writing and speaking	5.00 0 1	3.00 1.73 3	6.50 1.00 4	4.77 1.42 303		5.23 1.43 597
2. Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking	5.00 0 1	3.00 1.73 3	6.00 1.16 4	4.26 1.43 299		4.79 1.57 591
3. Use appropriate abbreviations of words in writing and speaking	6.00 0 1	3.00 1.73 3	5.25 2.36 4	5.22 1.43 301		5.44 1.39 595
4. Use words appropriately which mean the same as other words but are spelled differently	5.00 0 1	3.00 1.73 3	6.25 .96 4	4.48 1.40 303		4.89 1.55 597
5. Use words correctly which sound the same as other words but that have different meanings and spellings	5.00 0 1	3.00 1.73 3	6.00 1.41 4	4.48 1.53 302		4.91 1.61 597

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
COMMUNICATIONS SKILLS (continued)	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
6. Use words appropriately which are opposites of one another	x=4.93 sd=1.22 n=15	4.50 1.21 16	5.83 .75 6	4.00 0 2	7.00 0 1	4.90 1.24 40
7. Use appropriate word choices in writing and speaking	5.27 .88 15	5.60 1.12 15	5.33 1.03 6	5.50 .71 2	6.00 0 1	5.44 .97 39
8. Add appropriate beginnings and endings to words to change their meanings	4.53 1.41 15	4.63 1.46 16	4.83 1.17 6	4.00 0 2	6.00 0 1	4.63 1.33 40
9. Punctuate one's own correspondence, directives, or reports	4.87 1.55 15	5.27 1.44 15	4.67 1.86 6	5.00 1.41 2	6.00 0 1	5.03 1.50 39
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.40 .83 15	6.19 .91 16	5.67 1.03 6	7.00 0 2	7.00 0 1	6.25 .90 40
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.40 1.40 15	5.50 1.27 16	4.50 1.23 6	6.00 0 2	7.00 0 1	5.38 1.31 40
12. Read and understand forms	6.20 .94 15	6.06 1.18 16	6.17 .75 6	7.00 0 2	7.00 0 1	6.20 .99 40
13. Read and understand short notes, memos, and letters	5.80 .86 15	6.38 .96 16	5.83 1.17 6	7.00 0 2	7.00 0 1	6.13 .97 40
14. Read and understand graphs, charts, and tables to obtain factual information	5.80 .94 15	5.94 .93 16	5.17 1.47 6	6.50 .71 2	7.00 0 1	5.83 1.04 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
COMMUNICATIONS SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
6. Use words appropriately which are opposites of one another	$\bar{x}$=6.50 sd= .71 n=2	5.50 1.29 4	7.00 0 1	5.11 1.10 19	5.00 1.16 7	4.00 1.74 28
7. Use appropriate word choices in writing and speaking	7.50 .71 2	6.25 .50 4	7.00 0 1	6.16 .69 19	4.57 1.62 7	4.96 1.26 28
8. Add appropriate beginnings and endings to words to change their meanings	6.00 1.41 2	5.75 .96 4	7.00 0 1	5.26 .81 19	4.57 1.40 7	4.18 1.42 28
9. Punctuate one's own correspondence, directives, or reports	6.00 1.41 2	6.00 1.16 4	7.00 0 1	5.58 1.26 19	4.43 1.40 7	4.96 1.35 28
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.00 1.41 2	5.50 1.00 4	7.00 0 1	5.63 .96 19	6.29 1.25 7	5.86 1.51 28
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	6.00 1.41 2	5.75 .96 4	7.00 0 1	5.05 1.13 19	5.14 1.35 7	5.00 1.85 28
12. Read and understand forms	6.50 .71 2	5.75 1.26 4	7.00 0 1	6.37 .68 19	6.86 .38 7	6.57 .69 28
13. Read and understand short notes, memos, and letters	6.50 .71 2	6.00 1.41 4	7.00 0 1	6.21 1.03 19	6.43 .98 7	5.79 1.83 28
14. Read and understand graphs, charts, and tables to obtain factual information	6.50 .71 2	6.25 .96 4	7.00 0 1	4.95 1.22 19	6.14 .90 7	5.82 1.39 28

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
6. Use words appropriately which are opposites of one another	x=3.43 sd=2.15 n=7	7.00 0 1	7.00 0 1	6.00 0 1	6.47 1.03 26	6.00 .93 15
7. Use appropriate word choices in writing and speaking	5.14 1.35 7	7.00 0 1	7.00 0 1	6.00 0 1	6.64 .76 25	6.33 .82 15
8. Add appropriate beginnings and endings to words to change their meanings	4.43 1.51 7	6.00 0 1	6.00 0 1	5.00 0 1	6.46 .86 26	5.80 .86 15
9. Punctuate one's own correspondence, directives, or reports	5.57 2.15 7	7.00 0 1	6.00 0 1	7.00 0 1	6.77 .71 26	6.00 1.41 14
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.00 1.00 7	6.00 0 1	6.00 0 1	7.00 0 1	6.31 .84 26	5.73 1.03 15
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	4.29 2.14 7	4.00 0 1	6.00 0 1	4.00 0 1	5.92 1.32 26	5.40 1.12 15
12. Read and understand forms	5.43 2.15 7	7.00 0 1	6.00 0 1	6.00 0 1	6.58 .58 26	6.13 .92 15
13. Read and understand short notes, memos, and letters	4.71 2.36 7	7.00 0 1	5.00 0 1	7.00 0 1	6.65 .56 26	6.27 1.10 15
14. Read and understand graphs, charts, and tables to obtain factual information	5.29 1.50 7	5.00 0 1	5.00 0 1	3.00 0 1	5.89 1.21 26	5.60 1.24 15

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
COMMUNICATIONS SKILLS (continued)	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
6. Use words appropriately which are opposites of one another	x=4.67 sd=3.22 n=3	6.00 1.00 3	6.00 0 1	6.80 .45 5	5.50 1.69 8	5.33 1.68 132
7. Use appropriate word choices in writing and speaking	6.00 1.00 3	6.33 .58 3	6.00 0 1	7.00 0 5	6.50 1.07 8	5.95 1.20 130
8. Add appropriate beginnings and endings to words to change their meanings	5.00 1.73 3	6.33 .58 3	6.00 0 1	6.40 .55 5	5.86 1.07 7	5.40 1.36 131
9. Punctuate one's own correspondence, directives, or reports	6.00 1.00 3	6.33 .58 3	6.00 0 1	6.80 .45 5	6.63 1.06 8	5.86 1.38 131
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.00 1.00 3	6.33 .58 3	7.00 0 1	6.60 .55 5	6.25 1.17 8	6.02 1.10 132
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.33 1.53 3	6.00 1.00 3	6.00 0 1	5.80 1.30 5	6.00 1.20 8	5.38 1.46 132
12. Read and understand forms	6.67 .58 3	6.33 .58 3	7.00 0 1	6.80 .45 5	6.50 .76 8	6.42 .86 132
13. Read and understand short notes, memos, and letters	6.33 .58 3	6.33 .58 3	7.00 0 1	6.60 .89 5	6.88 .35 8	6.22 1.30 132
14. Read and understand graphs, charts, and tables to obtain factual information	6.00 1.00 3	5.33 1.53 3	7.00 0 1	6.00 1.00 5	6.00 1.20 8	5.69 1.27 132

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
6. Use words appropriately which are opposites of one another	x=6.67 sd= .58 n=3	5.83 1.47 12	5.38 1.34 18	5.00 0 3	7.00 0 3	7.00 0 3
7. Use appropriate word choices in writing and speaking	7.00 0 3	6.17 1.03 12	6.28 .67 18	6.00 1.00 3	7.00 0 3	7.00 0 3
8. Add appropriate beginnings and endings to words to change their meanings	7.00 0 3	5.75 1.42 12	5.94 1.16 18	5.33 .58 3	5.33 1.53 3	6.67 .58 3
9. Punctuate one's own correspondence, directives, or reports	7.00 0 3	5.58 1.62 12	5.11 1.68 18	5.33 1.53 3	5.33 .58 3	6.33 1.16 3
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	5.67 1.53 3	6.08 1.38 12	5.50 1.65 18	6.00 1.73 3	7.00 0 3	7.00 0 3
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	6.67 .58 3	5.75 1.42 12	5.11 1.91 18	6.00 1.73 3	6.67 .58 3	7.00 0 3
12. Read and understand forms	7.00 0 3	6.08 1.08 12	6.11 1.08 18	6.33 1.16 3	7.00 0 3	6.67 .58 3
13. Read and understand short notes, memos, and letters	7.00 0 3	6.25 1.14 12	6.41 .87 17	6.33 1.16 3	7.00 0 3	6.67 .58 3
14. Read and understand graphs, charts, and tables to obtain factual information	5.33 2.89 3	6.17 1.19 12	5.72 1.64 18	5.67 1.16 3	7.00 0 3	6.67 .58 3

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
6. Use words appropriately which are opposites of one another	$\bar{x}$=6.00 sd=0 n=1	5.75 1.17 8	7.00 0 1	5.00 1.00 5	5.81 1.25 57
7. Use appropriate word choices in writing and speaking	6.00 0 1	6.25 .89 8	6.00 0 1	5.40 .89 5	6.26 .84 57
8. Add appropriate beginnings and endings to words to change their meanings	6.00 0 1	5.43 1.27 7	6.00 0 1	5.00 1.16 4	5.80 1.19 55
9. Punctuate one's own correspondence, directives, or reports	6.00 0 1	5.38 1.51 8	6.00 0 1	5.00 1.00 5	5.46 1.45 57
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.00 0 1	5.50 1.77 8	7.00 0 1	4.40 1.52 5	5.75 1.54 57
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	4.00 0 1	6.00 1.41 8	7.00 0 1	5.20 1.30 5	5.70 1.56 57
12. Read and understand forms	6.00 0 1	6.50 .76 8	7.00 0 1	5.60 1.14 5	6.26 .97 57
13. Read and understand short notes, memos, and letters	6.00 0 1	6.38 1.06 8	7.00 0 1	5.40 1.34 5	6.36 .98 56
14. Read and understand graphs, charts, and tables to obtain factual information	6.00 0 1	5.75 1.58 8	7.00 0 1	5.60 1.14 5	5.93 1.43 57

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
6. Use words appropriately which are opposites of one another	$\bar{x}$=6.27 sd= .94 n=22	4.75 2.22 4	5.35 1.57 20	4.88 1.81 8	4.50 3.54 2	6.38 .74 8
7. Use appropriate word choices in writing and speaking	6.77 .43 22	6.75 .50 4	5.95 1.28 20	5.88 1.25 8	7.00 0 2	6.63 .52 8
8. Add appropriate beginnings and endings to words to change their meanings	6.00 1.02 22	4.25 1.71 4	5.15 1.66 20	4.63 1.41 8	4.00 2.83 2	5.75 1.28 8
9. Punctuate one's own correspondence, directives, or reports	5.73 1.64 22	6.50 .58 4	5.10 1.52 20	5.00 1.60 8	7.00 0 2	6.13 .84 8
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	5.64 1.26 22	5.75 1.26 4	6.10 1.45 20	4.88 .99 8	5.00 1.41 2	6.50 .54 8
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.59 1.10 22	5.50 1.00 4	5.55 1.54 20	4.50 .93 8	5.00 1.41 2	6.00 1.10 8
12. Read and understand forms	6.05 1.13 22	6.25 1.50 4	6.21 1.32 19	5.88 .99 8	5.50 2.12 2	6.38 .74 8
13. Read and understand short notes, memos, and letters	6.36 .95 22	6.50 1.00 4	6.10 1.21 20	5.88 1.25 8	6.00 1.41 2	6.50 .76 8
14. Read and understand graphs, charts, and tables to obtain factual information	4.86 1.42 22	5.50 1.73 4	5.25 1.65 20	4.50 1.20 8	4.50 2.12 2	5.00 1.51 8

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
6. Use words appropriately which are opposites of one another	x=4.00 sd=4.24 n=2	5.62 1.61 66				
7. Use appropriate word choices in writing and speaking	5.50 .71 2	6.36 .97 66				
8. Add appropriate beginnings and endings to words to change their meanings	4.50 2.12 2	5.33 1.50 66				
9. Punctuate one's own correspondence, directives, or reports	5.50 .71 2	5.58 1.48 66				
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.50 .71 2	5.80 1.27 66				
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.50 2.12 2	5.47 1.27 66				
12. Read and understand forms	6.50 .71 2	6.12 1.14 65				
13. Read and understand short notes, memos, and letters	6.50 .71 2	6.24 1.04 66				
14. Read and understand graphs, charts, and tables to obtain factual information	6.00 1.41 2	5.02 1.48 66				

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
6. Use words appropriately which are opposites of one another	x=4.80 sd=1.92 n=5	4.75 2.22 4	3.00 0 1	5.50 1.73 4	4.65 1.46 20	5.15 1.53 41
7. Use appropriate word choices in writing and speaking	4.60 1.82 5	4.50 2.08 4	3.00 0 1	5.50 1.73 4	4.70 1.30 20	5.24 1.36 41
8. Add appropriate beginnings and endings to words to change their meanings	4.20 1.30 5	4.00 1.41 4	3.00 0 1	5.00 2.71 4	4.10 1.41 20	4.42 1.50 41
9. Punctuate one's own correspondence, directives, or reports	4.80 .45 5	4.75 .50 4	3.00 0 1	5.25 2.22 4	3.95 1.54 20	4.49 1.52 41
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.60 .55 5	6.50 .58 4	3.00 0 1	6.75 .50 4	6.05 1.05 20	6.48 1.11 40
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.20 1.30 5	4.75 .96 4	3.00 0 1	6.25 .96 4	5.05 1.64 20	5.51 1.58 41
12. Read and understand forms	6.00 .71 5	5.75 .50 4	5.00 0 1	6.25 .50 4	5.50 1.32 20	6.15 1.15 41
13. Read and understand short notes, memos, and letters	5.40 1.82 5	5.00 1.83 4	5.00 0 1	6.00 .82 4	5.35 1.39 20	5.71 1.42 41
14. Read and understand graphs, charts, and tables to obtain factual information	6.40 .89 5	6.25 .96 4	4.00 0 1	6.75 .50 4	5.75 1.41 20	5.98 1.25 40

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
6. Use words appropriately which are opposites of one another	x=4.00 sd=1.41 n=2	6.14 .69 7	4.58 1.02 24	5.00 1.41 6	4.50 2.12 2	6.00 .71 5
7. Use appropriate word choices in writing and speaking	5.00 1.41 2	6.43 .79 7	4.83 .87 24	4.67 1.63 6	4.00 1.41 2	5.80 .84 5
8. Add appropriate beginnings and endings to words to change their meanings	2.50 .71 2	5.43 .98 7	4.00 .83 24	4.50 1.64 6	4.00 0 2	5.00 1.00 5
9. Punctuate one's own correspondence, directives, or reports	4.50 2.12 2	5.71 1.38 7	3.96 1.00 24	4.00 1.55 6	4.50 .71 2	4.80 .84 5
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.00 1.41 2	6.71 .49 7	5.38 1.17 24	5.33 1.75 6	7.00 0 2	6.20 .84 5
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	4.00 1.41 2	6.14 1.07 7	4.42 .88 24	4.50 1.64 6	3.50 2.12 2	5.80 1.10 5
12. Read and understand forms	6.00 1.41 2	6.29 .76 7	5.04 1.20 24	5.50 1.38 6	6.00 0 2	6.60 .55 5
13. Read and understand short notes, memos, and letters	4.50 2.12 2	5.71 1.11 7	5.04 1.00 24	5.50 1.23 6	6.00 0 2	6.20 .45 5
14. Read and understand graphs, charts, and tables to obtain factual information	6.00 1.41 2	5.86 .90 7	5.29 1.30 24	6.50 .55 6	6.50 .71 2	6.20 .84 5

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
6. Use words appropriately which are opposites of one another	x̄=4.92 sd=1.52 n=26	5.30 1.16 10	5.00 1.00 3	5.28 1.46 25	4.00 2.83 2	4.59 1.46 17
7. Use appropriate word choices in writing and speaking	5.23 1.48 26	5.60 .70 10	4.67 1.16 3	5.20 1.00 25	5.50 .71 2	4.53 1.33 17
8. Add appropriate beginnings and endings to words to change their meanings	4.19 1.44 26	4.80 1.14 10	4.33 .58 3	4.72 1.40 25	4.00 1.41 2	4.06 1.39 17
9. Punctuate one's own correspondence, directives, or reports	4.35 1.52 26	5.00 1.05 10	4.67 1.16 3	4.52 1.33 25	5.00 1.41 2	4.82 1.33 17
Reading						
10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.62 .64 26	6.20 1.14 10	5.00 1.00 3	6.40 1.12 25	6.50 .71 2	5.47 1.70 17
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	4.69 1.62 26	5.80 1.23 10	4.67 1.16 3	5.76 1.13 25	6.50 .71 2	5.29 1.65 17
12. Read and understand forms	6.08 1.19 25	5.90 .99 10	5.67 .58 3	6.13 .74 24	6.50 .71 2	6.29 .92 17
13. Read and understand short notes, memos, and letters	5.92 1.32 24	5.30 1.25 10	5.67 .58 3	5.56 1.23 25	6.50 .71 2	6.35 .79 17
14. Read and understand graphs, charts, and tables to obtain factual information	6.23 1.14 26	6.50 .97 10	6.00 0 3	6.54 .66 24	6.50 .71 2	5.53 1.59 17

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
6. Use words appropriately which are opposites of one another	x̄=4.96 sd=1.17 n=22	4.40 1.52 5	4.39 1.65 26	4.50 .71 2	4.75 1.83 8	4.00 0 1
7. Use appropriate word choices in writing and speaking	5.00 1.24 23	4.40 1.52 5	4.15 1.54 26	5.50 2.12 2	6.00 .76 8	4.00 0 1
8. Add appropriate beginnings and endings to words to change their meanings	4.30 1.02 23	4.00 1.58 5	3.56 1.61 25	4.50 .71 2	5.13 .36 8	4.00 0 1
9. Punctuate one's own correspondence, directives, or reports	4.30 1.36 23	4.00 1.58 5	3.77 1.53 26	5.50 2.12 2	3.75 1.49 9	4.00 0 1
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	5.87 1.29 23	6.40 .89 5	5.39 1.17 26	7.00 0 2	6.25 1.04 8	6.00 0 1
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.13 1.14 23	4.40 2.19 5	4.42 1.17 26	6.00 0 2	5.38 1.19 8	4.00 0 1
12. Read and understand forms	5.83 1.11 23	5.60 1.67 5	5.00 1.30 26	5.50 2.12 2	5.25 1.28 8	5.00 0 1
13. Read and understand short notes, memos, and letters	5.61 1.03 23	5.60 2.07 5	4.96 1.31 26	6.00 1.41 2	5.38 1.30 8	4.00 0 1
14. Read and understand graphs, charts, and tables to obtain factual information	6.17 1.03 23	6.80 .45 5	5.46 1.21 26	7.00 0 2	5.50 1.51 8	6.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
COMMUNICATIONS SKILLS (continued)	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
6. Use words appropriately which are opposites of one another	$\bar{x}$=6.00 sd=1.27 n=6	4.75 2.50 4	4.83 1.19 12	4.00 4.24 2	4.00 0 1	6.00 0 1
7. Use appropriate word choices in writing and speaking	6.00 .89 6	5.50 .58 4	5.00 .95 12	5.50 .71 2	3.00 0 1	6.00 0 1
8. Add appropriate beginnings and endings to words to change their meanings	5.33 1.51 6	4.75 .96 4	4.50 1.09 12	4.50 2.12 2	3.00 0 1	6.00 0 1
9. Punctuate one's own correspondence, directives, or reports	5.50 1.23 6	4.00 2.16 4	4.33 1.37 12	5.50 .71 2	2.00 0 1	6.00 0 1
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	6.50 .55 6	5.75 1.26 4	5.17 1.19 12	6.50 .71 2	3.00 0 1	6.00 0 1
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	6.00 .63 6	5.50 1.29 4	4.50 1.09 12	5.50 2.12 2	6.00 0 1	6.00 0 1
12. Read and understand forms	6.33 .82 6	5.75 .96 4	5.67 .89 12	6.50 .71 2	6.00 0 1	7.00 0 1
13. Read and understand short notes, memos, and letters	6.33 .82 6	5.75 .96 4	5.50 1.31 12	6.50 .71 2	6.00 0 1	7.00 0 1
14. Read and understand graphs, charts, and tables to obtain factual information	6.50 .55 6	5.25 .50 4	4.75 1.22 12	6.00 1.41 2	3.00 0 1	5.00 0 1

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
6. Use words appropriately which are opposites of one another	x=5.00 sd=0 n=1	3.33 1.16 3	6.25 .96 4	4.91 1.47 302		5.17 1.53 597
7. Use appropriate word choices in writing and speaking	6.00 0 1	3.00 1.73 3	6.75 .50 4	5.03 1.34 303		5.52 1.32 595
8. Add appropriate beginnings and endings to words to change their meanings	5.00 0 1	3.00 1.73 3	6.75 .50 4	4.35 1.40 302		4.84 1.48 594
9. Punctuate one's own correspondence, directives, or reports	5.00 0 1	3.00 1.73 3	6.75 .50 4	4.41 1.45 303		5.00 1.57 596
Reading 10. Read, understand, and find information or gather data from books, manuals, directories or other documents	5.00 0 1	3.00 1.73 3	7.00 0 4	6.01 1.24 302		5.98 1.23 597
11. Restate or paraphrase a reading passage to confirm one's own understanding of what was read	5.00 0 1	3.00 1.73 3	6.50 1.00 4	5.11 1.43 302		5.29 1.44 597
12. Read and understand forms	6.00 0 1	3.33 1.16 3	6.50 1.00 4	5.79 1.17 301		6.04 1.10 595
13. Read and understand short notes, memos, and letters	6.00 0 1	3.33 1.16 3	7.00 0 4	5.57 1.28 301		5.90 1.26 595
14. Read and understand graphs, charts, and tables to obtain factual information	6.00 0 1	3.67 .58 3	7.00 0 4	5.91 1.22 300		5.76 1.30 595

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
15. Understand the meanings of words in sentences	x=5.80 sd=1.27 n=15	5.88 .96 16	5.83 .75 6	6.50 .71 2	7.00 0 1	5.90 1.03 40
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.20 1.70 15	5.87 1.30 15	5.33 1.03 6	6.00 1.41 2	7.00 0 1	5.56 1.43 39
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	5.93 1.58 15	6.25 1.00 16	5.67 1.37 6	6.00 0 2	7.00 0 1	6.05 1.26 40
Writing						
18. Review and edit other's correspondence, directives, or reports	4.00 1.31 15	4.25 1.24 16	4.00 .89 6	4.00 0 2	5.00 0 1	4.13 1.16 40
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	5.21 1.37 14	5.40 1.35 15	4.00 1.58 5	5.50 .71 2	6.00 0 1	5.16 1.39 37
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.43 1.02 14	5.75 1.13 16	4.83 1.72 6	6.00 1.41 2	7.00 0 1	5.54 1.21 39
Speaking						
21. Speak fluently with individuals or groups	4.87 1.30 15	5.19 1.47 16	4.83 .75 6	3.50 .71 2	6.00 0 1	4.95 1.30 40
22. Pronounce words correctly	5.20 1.37 15	5.19 1.47 16	5.00 .63 6	4.00 1.41 2	7.00 0 1	5.15 1.33 40
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	4.80 1.21 15	4.81 1.33 16	5.67 1.03 6	3.00 0 2	7.00 0 1	4.90 1.32 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
COMMUNICATIONS SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Process Systems
15. Understand the meanings of words in sentences	x=6.50 sd= .71 n=2	6.50 .58 4	7.00 0 1	6.00 .82 19	5.86 .90 7	5.61 1.42 28
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.50 .71 2	6.50 .58 4	7.00 0 1	5.63 1.07 19	4.71 1.38 7	4.75 1.71 28
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.50 .71 2	6.75 .50 4	7.00 0 1	5.90 1.20 19	4.71 1.25 7	4.46 1.82 28
Writing						
18. Review and edit other's correspondence, directives, or reports	6.50 .71 2	6.00 .82 4	7.00 0 1	4.42 1.35 19	4.71 1.70 7	4.46 1.82 28
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	6.00 1.41 2	6.00 1.16 4	7.00 0 1	5.00 1.56 19	4.14 2.48 7	4.82 1.79 28
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	7.00 0 2	6.75 .50 4	7.00 0 1	5.63 1.30 19	5.43 1.27 7	5.32 1.63 28
Speaking						
21. Speak fluently with individuals or groups	5.00 0 2	6.00 1.16 4	5.00 0 1	6.00 .94 19	5.86 .90 7	4.93 1.56 28
22. Pronounce words correctly	6.50 .71 2	6.50 .58 4	7.00 0 1	6.16 .83 19	6.00 .58 7	5.00 1.44 28
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	6.50 .71 2	6.25 .50 4	6.00 0 1	6.00 1.00 19	5.14 1.77 7	4.29 1.61 28

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
15. Understand the meanings of words in sentences	x̄=5.14 sd= .90 n=7	7.00 0 1	7.00 0 1	7.00 0 1	6.73 .53 26	6.40 .74 15
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	4.57 1.62 7	7.00 0 1	7.00 0 1	7.00 0 1	6.85 .46 26	6.53 .83 15
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	4.29 1.80 7	7.00 0 1	7.00 0 1	7.00 0 1	6.81 .49 26	6.57 .85 14
Writing 18. Review and edit other's correspondence, directives, or reports	4.57 2.57 7	6.00 0 1	7.00 0 1	6.00 0 1	6.46 .95 26	5.73 1.28 15
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.57 1.90 7	7.00 0 1	7.00 0 1	7.00 0 1	6.35 1.09 26	5.80 1.37 15
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.14 2.04 7	7.00 0 1	7.00 0 1	7.00 0 1	6.58 1.07 26	5.80 1.42 15
Speaking 21. Speak fluently with individuals or groups	4.57 2.07 7	6.00 0 1	7.00 0 1	5.00 0 1	6.12 1.24 26	5.87 .99 15
22. Pronounce words correctly	4.57 1.72 7	7.00 0 1	7.00 0 1	7.00 0 1	6.58 .81 26	6.20 .86 15
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	4.00 2.31 7	6.00 0 1	6.00 0 1	4.00 0 1	6.15 1.22 26	6.20 .86 15

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
15. Understand the meanings of words in sentences	x=5.67 sd=1.53 n=3	6.00 1.00 3	6.00 0 1	7.00 0 5	6.75 .46 8	6.18 1.03 132
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.00 1.73 3	6.67 .58 3	6.00 0 1	7.00 0 5	6.63 .74 8	5.91 1.42 132
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.67 .58 3	6.33 .58 3	7.00 0 1	7.00 0 5	6.88 .35 8	5.90 1.52 131
Writing						
18. Review and edit other's correspondence, directives, or reports	4.33 2.08 3	6.33 .58 3	7.00 0 1	6.20 1.30 5	6.38 1.41 8	5.39 1.68 132
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.67 2.31 3	5.67 1.16 3	7.00 0 1	6.60 .89 5	6.13 1.73 8	5.51 1.68 132
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.33 2.08 3	6.00 1.00 3	7.00 0 1	6.80 .45 5	6.25 1.75 8	5.92 1.44 132
Speaking						
21. Speak fluently with individuals or groups	5.00 2.65 3	5.00 1.73 3	7.00 0 1	6.60 .55 5	6.38 1.06 8	5.68 1.37 132
22. Pronounce words correctly	6.33 1.16 3	5.67 1.16 3	7.00 0 1	6.80 .45 5	6.50 1.07 8	5.99 1.22 132
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	6.00 1.73 3	5.33 1.53 3	7.00 0 1	6.00 .71 5	5.88 .99 8	5.52 1.52 132

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
15. Understand the meanings of words in sentences	x=7.00 sd=0 n=3	6.42 0 12	6.29 .99 17	6.00 1.00 3	7.00 0 3	7.00 0 3
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.67 .58 3	5.83 1.34 12	6.00 1.46 18	6.00 1.00 3	7.00 0 3	7.00 0 3
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.67 .58 3	5.08 1.93 12	4.44 1.89 18	6.00 1.00 3	5.00 1.73 3	5.33 1.53 3
Writing						
18. Review and edit other's correspondence, directives, or reports	6.67 .58 3	4.58 2.19 12	3.67 2.06 18	3.33 1.53 3	4.33 2.52 3	4.67 2.08 3
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	6.67 .58 3	5.92 1.38 12	5.00 1.75 18	4.67 1.53 3	6.00 1.73 3	6.33 1.16 3
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	6.67 .58 3	6.00 1.28 12	6.00 1.41 18	4.33 .58 3	7.00 0 3	6.67 .58 3
Speaking						
21. Speak fluently with individuals or groups	6.67 .58 3	5.67 1.23 12	5.78 1.52 18	4.00 1.00 3	6.33 .58 3	6.67 .58 3
22. Pronounce words correctly	6.67 .58 3	6.08 .90 12	6.06 1.55 18	5.67 1.53 3	6.33 .58 3	7.00 0 3
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	7.00 0 3	6.17 .94 12	6.33 .97 18	6.00 1.00 3	6.33 1.16 3	7.00 0 3

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS	
15. Understand the meanings of words in sentences	$\bar{x}$=6.00 sd=0 n=1	6.38 .74 8	7.00 0 1	5.60 .89 5	6.38 .84 56	
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.00 0 1	6.25 1.04 8	7.00 0 1	5.80 1.10 5	6.14 1.19 57	
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.00 0 1	5.13 1.55 8	7.00 0 1	3.20 2.17 5	4.91 1.84 57	
Writing 18. Review and edit other's correspondence, directives, or reports	3.00 0 1	4.38 1.85 8	5.00 0 1	3.20 1.92 5	4.16 2.01 57	
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	6.00 0 1	5.00 1.77 8	6.00 0 1	5.20 .84 5	5.44 1.52 57	
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	6.00 0 1	5.57 1.67 8	7.00 0 1	5.40 .55 5	5.97 1.28 57	
Speaking 21. Speak fluently with individuals or groups	4.00 0 1	6.13 .84 8	6.00 0 1	5.20 .84 5	5.75 1.26 57	
22. Pronounce words correctly	6.00 0 1	6.13 .84 8	7.00 0 1	5.80 .45 5	6.14 1.09 57	
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	5.00 0 1	6.75 .46 8	7.00 0 1	6.00 1.00 5	6.37 .88 57	

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
15. Understand the meanings of words in sentences	x̄=6.55 sd= .86 n=22	6.75 .50 4	6.15 1.14 20	5.88 1.13 8	7.00 0 2	6.50 .54 8
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.24 1.22 22	6.25 .50 4	5.90 1.59 20	5.88 .99 8	6.00 0 2	6.88 .35 8
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.32 1.29 22	4.75 1.50 4	5.90 1.25 20	5.25 1.67 8	3.50 .71 2	6.88 .35 8
Writing 18. Review and edit other's correspondence, directives, or reports	4.68 1.62 22	3.25 2.63 4	4.05 1.82 20	3.50 1.20 8	1.00 0 2	5.75 1.04 8
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	6.00 .87 22	5.50 1.00 4	4.80 1.64 20	4.88 1.46 8	5.00 1.41 2	6.38 .52 8
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	6.23 1.19 22	5.75 1.26 4	5.74 1.49 19	5.00 1.41 8	5.00 1.41 2	6.63 .52 8
Speaking 21. Speak fluently with individuals or groups	6.41 .85 22	6.00 .82 4	5.42 1.39 19	5.63 .74 8	6.50 .71 2	6.38 .74 8
22. Pronounce words correctly	6.68 .48 22	6.25 .96 4	5.74 1.28 19	5.88 .64 8	7.00 0 2	6.63 .52 8
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	6.50 .80 22	4.75 1.26 4	5.37 1.42 19	5.50 1.20 8	4.00 1.41 2	6.75 .71 8

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
15. Understand the meanings of words in sentences	x=5.50 sd=2.12 n=2	6.33 .98 66				
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.50 2.12 2	6.14 1.24 65				
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.50 .71 2	5.96 1.39 66				
Writing 18. Review and edit other's correspondence, directives, or reports	3.50 2.12 2	4.24 1.82 66				
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.00 2.83 2	5.42 1.39 66				
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.00 2.83 2	5.88 1.35 65				
Speaking 21. Speak fluently with individuals or groups	4.00 2.83 2	5.92 1.18 65				
22. Pronounce words correctly	6.00 1.41 2	6.26 .94 65				
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	5.50 2.12 2	5.86 1.30 65				

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
15. Understand the meanings of words in sentences	x=5.80 sd=1.30 n=5	5.50 1.29 4	4.00 0 1	6.25 .50 4	5.60 1.23 20	5.95 1.09 40
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.60 1.14 5	5.50 1.29 4	4.00 0 1	4.25 1.50 4	4.80 1.64 20	5.10 1.55 41
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	5.60 .89 5	5.50 1.00 4	3.00 0 1	5.75 1.26 4	5.85 1.23 20	5.27 1.76 41
Writing 18. Review and edit other's correspondence, directives, or reports	4.40 1.82 5	4.00 1.83 4	3.00 0 1	5.00 .82 4	4.55 1.82 20	4.00 1.57 41
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.40 1.82 5	4.00 1.83 4	3.00 0 1	6.00 .82 4	5.15 1.39 20	4.95 1.48 41
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.80 1.30 5	5.75 1.50 4	3.00 0 1	6.50 .58 4	5.50 1.40 20	5.49 1.38 41
Speaking 21. Speak fluently with individuals or groups	4.80 1.30 5	4.50 1.29 4	3.00 0 1	4.50 1.73 4	4.85 1.53 20	5.07 1.33 41
22. Pronounce words correctly	5.20 .84 5	5.00 .82 4	3.00 0 1	5.25 1.50 4	5.10 1.29 20	5.29 1.27 41
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	3.80 2.17 5	3.00 1.41 4	3.00 0 1	5.00 1.41 4	4.55 .76 20	4.46 1.63 41

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
15. Understand the meanings of words in sentences	x̄=4.50 sd= .71 n=2	5.71 .95 7	5.21 1.06 24	5.00 1.41 6	4.00 2.83 2	6.40 .55 5
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	2.50 .71 2	6.29 1.11 7	4.52 1.28 23	4.33 2.16 6	4.50 2.12 2	5.60 1.52 5
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	2.00 1.41 2	5.00 1.00 7	4.74 1.14 23	6.17 .98 6	3.00 2.83 2	5.20 1.92 5
Writing 18. Review and edit other's correspondence, directives, or reports	1.50 .71 2	5.00 1.16 7	3.67 1.09 24	4.00 2.28 6	4.00 1.41 2	4.40 1.52 5
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	5.00 2.83 2	5.29 1.25 7	4.38 1.10 24	4.33 1.75 6	4.50 .71 2	4.80 .84 5
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	6.00 1.41 2	5.43 1.13 7	4.70 1.15 23	5.33 1.03 6	5.50 .71 2	5.80 .84 5
Speaking 21. Speak fluently with individuals or groups	4.50 .71 2	5.29 1.50 7	4.25 .94 24	5.33 1.37 6	4.50 .71 2	5.40 .89 5
22. Pronounce words correctly	2.50 .71 2	5.71 .95 7	4.50 1.10 24	5.17 1.47 6	4.50 .71 2	5.60 1.14 5
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	2.50 .71 2	5.43 1.27 7	4.21 1.10 24	4.00 1.41 6	4.00 0 2	5.00 1.23 5

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
15. Understand the meanings of words in sentences	$\bar{x}$=6.04 sd=1.11 n=26	6.10 .74 10	6.00 1.00 3	6.00 .96 25	7.00 0 2	5.18 1.55 17
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.54 1.53 26	5.30 1.06 10	5.00 1.73 3	5.24 1.20 25	6.50 .71 2	5.59 1.46 17
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	4.35 1.85 26	4.90 1.45 10	6.33 .58 3	4.56 1.58 25	5.50 2.12 2	4.71 1.53 17
Writing 18. Review and edit other's correspondence, directives, or reports	4.08 1.83 26	4.30 1.49 10	4.00 1.00 3	4.32 1.28 25	3.00 2.83 2	4.82 1.74 17
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.50 1.61 26	5.40 1.27 10	4.33 1.53 3	5.36 1.41 25	5.00 1.41 2	4.94 1.68 17
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.23 1.58 26	5.90 .88 10	4.33 1.53 3	5.48 1.26 25	6.00 0 2	5.18 1.55 17
Speaking 21. Speak fluently with individuals or groups	4.54 1.56 26	4.80 1.40 10	4.67 1.53 3	4.92 1.41 25	5.50 .71 2	3.71 1.45 17
22. Pronounce words correctly	5.08 1.23 26	5.40 .97 10	4.67 1.53 3	5.20 1.19 25	5.50 .71 2	4.05 1.30 17
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	4.48 1.58 25	4.60 1.27 10	4.67 .58 3	4.64 1.44 25	4.00 1.41 2	3.82 1.24 17

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
15. Understand the meanings of words in sentences	x=5.39 sd=1.20 n=23	5.60 1.14 5	4.81 1.39 26	6.50 .71 2	6.13 .84 8	4.00 0 1
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.13 1.22 23	4.60 1.67 5	4.35 1.44 26	6.50 .71 2	4.88 1.64 8	4.00 0 1
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	4.35 1.40 23	4.40 2.07 5	4.69 1.85 26	5.50 .71 2	5.88 1.13 8	5.00 0 1
Writing 18. Review and edit other's correspondence, directives, or reports	3.96 1.55 23	4.20 2.05 5	3.88 1.62 25	5.00 2.83 2	2.75 1.49 8	2.00 0 1
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	4.39 1.59 23	5.00 .71 5	3.73 1.54 26	6.00 1.41 2	4.13 1.89 8	2.00 0 1
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	4.91 1.35 23	5.00 1.23 5	4.54 1.73 26	5.50 2.12 2	4.75 2.19 8	4.00 0 1
Speaking 21. Speak fluently with individuals or groups	4.35 1.15 23	4.60 1.67 5	3.81 1.47 26	5.50 2.12 2	6.75 .46 8	4.00 0 1
22. Pronounce words correctly	4.87 1.33 23	5.60 .55 5	4.00 1.63 26	5.00 1.41 2	6.50 .76 8	4.00 0 1
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	4.39 1.31 23	4.80 1.92 5	3.46 1.45 26	5.50 .71 2	6.38 .74 8	1.00 0 1

COMMUNICATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
15. Understand the meanings of words in sentences	$\bar{x}$=5.83 sd=1.17 n=6	6.00 .82 4	5.42 1.24 12	5.50 2.12 2	5.00 0 1	7.00 0 1
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	5.33 1.51 6	4.75 .50 4	4.83 1.40 12	5.50 2.12 2	2.00 0 1	5.00 0 1
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	5.67 1.21 6	4.00 2.16 4	4.92 1.62 12	6.50 .71 2	6.00 0 1	7.00 0 1
Writing 18. Review and edit other's correspondence, directives, or reports	5.00 .89 6	3.50 1.92 4	3.67 1.07 12	3.50 2.12 2	2.00 0 1	7.00 0 1
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	5.50 1.38 6	3.75 1.89 4	4.00 1.48 12	4.00 2.83 2	3.00 0 1	7.00 0 1
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.50 1.38 6	4.50 2.38 4	4.75 1.82 12	5.00 2.83 2	6.00 0 1	7.00 0 1
Speaking 21. Speak fluently with individuals or groups	5.67 .82 6	5.75 1.50 4	4.67 1.23 12	4.00 2.83 2	2.00 0 1	6.00 0 1
22. Pronounce words correctly	5.50 1.05 6	6.25 .96 4	5.17 .94 12	6.00 1.41 2	5.00 0 1	5.00 0 1
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	4.83 .75 6	4.25 1.26 4	5.17 1.40 12	5.50 2.12 2	4.00 0 1	4.00 0 1

COMMUNICATIONS SKILLS (continued)	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
	INDUSTRIAL OCCUPATIONS					
15. Understand the meanings of words in sentences	$\bar{x}$=5.00 sd=0 n=1	3.67 .58 3	7.00 0 4	5.62 1.22 302		5.91 1.15 596
16. Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words	6.00 0 1	3.00 1.73 3	7.00 0 4	5.04 1.49 302		5.49 1.49 595
17. Use the telephone and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls	6.00 0 1	3.00 1.73 3	6.50 1.00 4	4.95 1.62 302		5.34 1.65 596
Writing 18. Review and edit other's correspondence, directives, or reports	5.00 0 1	3.00 1.73 3	6.50 1.00 4	4.11 1.61 302		4.41 1.74 597
19. Compose logical and understandable written correspondence, directives, memos, short notes, or reports	6.00 0 1	3.00 1.73 3	6.75 .50 4	4.69 1.55 303		5.05 1.59 595
20. Write logical and understandable statements, phrases, or sentences to accurately fill out forms	5.00 0 1	3.00 1.73 3	7.00 0 4	5.21 1.47 302		5.54 1.48 595
Speaking 21. Speak fluently with individuals or groups	6.00 0 1	3.00 1.73 3	7.00 0 4	4.70 1.46 303		5.17 1.47 597
22. Pronounce words correctly	5.00 0 1	3.00 1.73 3	7.00 0 4	5.00 1.34 303		5.47 1.36 597
23. Speak effectively using appropriate behaviors such as eye contact, posture, and gestures	5.00 0 1	3.67 2.31 3	6.50 1.00 4	4.43 1.52 302		5.04 1.59 596

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x̄=5.00 sd=1.00 n=15	4.94 1.18 16	5.00 .63 6	4.00 0 2	6.00 0 1	4.95 1.01 40
25. Ask appropriate questions to clarify another's written or oral communications	5.27 1.16 15	5.31 1.30 16	5.50 1.05 6	4.50 .71 2	7.00 0 1	5.33 1.19 40
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	4.80 1.15 15	4.63 1.36 16	4.67 .82 6	3.50 .71 2	6.00 0 1	4.68 1.19 40
27. Take accurate notes which summarize the material presented from spoken conversations	4.43 1.28 14	5.25 1.39 16	4.33 .82 6	5.00 1.41 2	6.00 0 1	4.82 1.30 39
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.43 .65 14	6.50 .63 16	6.50 .55 6	6.50 .71 2	7.00 0 1	6.49 .60 39
2. Work without the need for close supervision	6.64 .63 14	6.56 .51 16	6.67 .52 6	7.00 0 2	7.00 0 1	6.64 .54 39
3. Work cooperatively as a member of a team	6.64 .63 14	6.75 .45 16	6.67 .82 6	7.00 0 2	7.00 0 1	6.72 .56 39
4. Get along and work effectively with people of different personalities	6.57 .65 14	6.63 .62 16	6.67 .52 6	7.00 0 2	7.00 0 1	6.64 .58 39
5. Show up regularly and on time for activities and appointments	6.60 .63 15	6.69 .48 16	6.83 .41 6	7.00 0 2	7.00 0 1	6.70 .52 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
Listening 24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=5.50 sd= .71 n=2	5.75 .50 4	6.00 0 1	5.53 .84 19	4.57 1.72 7	4.71 1.58 28
25. Ask appropriate questions to clarify another's written or oral communications	6.50 .71 2	6.00 .82 4	7.00 0 1	6.00 .82 19	5.86 .69 7	5.75 .97 28
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	6.00 0 2	5.75 .50 4	6.00 0 1	5.74 .93 19	4.14 2.41 7	3.86 1.92 28
27. Take accurate notes which summarize the material presented from spoken conversations	6.00 1.41 2	5.50 1.00 4	7.00 0 1	4.63 1.38 19	5.57 1.90 7	5.79 1.48 28
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors 1. Work effectively under different kinds of supervision	6.50 .71 2	6.50 .58 4	7.00 0 1	6.74 .45 19	6.57 .54 7	6.25 .75 28
2. Work without the need for close supervision	6.50 .71 2	6.25 .96 4	7.00 0 1	6.58 .61 19	6.71 .49 7	6.36 .68 28
3. Work cooperatively as a member of a team	6.50 .71 2	6.50 .58 4	7.00 0 1	6.63 .60 19	6.43 .54 7	6.25 .80 28
4. Get along and work effectively with people of different personalities	6.50 .71 2	6.50 .58 4	7.00 0 1	6.74 .45 19	6.71 .49 7	6.36 .73 28
5. Show up regularly and on time for activities and appointments	7.00 0 2	7.00 0 4	7.00 0 1	6.90 .32 19	7.00 0 7	6.71 .46 28

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=3.86 sd=1.95 n=7	5.00 0 1	6.00 0 1	3.00 0 1	6.00 1.30 26	5.47 .99 15
25. Ask appropriate questions to clarify another's written or oral communications	5.29 1.38 7	5.00 0 1	7.00 0 1	5.00 0 1	6.27 .87 26	6.07 .96 15
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	3.71 2.36 7	5.00 0 1	5.00 0 1	3.00 0 1	5.96 1.22 26	5.60 1.06 15
27. Take accurate notes which summarize the material presented from spoken conversations	5.57 1.40 7	7.00 0 1	6.00 0 1	4.00 0 1	5.85 1.46 26	5.71 1.20 14
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.14 .90 7	7.00 0 1	7.00 0 1	6.00 0 1	6.65 .63 26	6.57 .65 14
2. Work without the need for close supervision	6.14 .90 7	7.00 0 1	7.00 0 1	5.00 0 1	6.77 .51 26	6.50 .65 14
3. Work cooperatively as a member of a team	6.00 1.53 7	7.00 0 1	7.00 0 1	7.00 0 1	6.77 .59 26	6.50 .65 14
4. Get along and work effectively with people of different personalities	6.14 1.46 7	7.00 0 1	7.00 0 1	7.00 0 1	6.77 .59 26	6.71 .47 14
5. Show up regularly and on time for activities and appointments	6.71 .49 7	7.00 0 1	7.00 0 1	7.00 0 1	6.96 .20 26	6.79 .43 14

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
Listening 24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=5.67 sd= .58 n=3	5.67 1.16 3	6.00 0 1	5.80 .84 5	5.63 1.30 8	5.32 1.38 132
25. Ask appropriate questions to clarify another's written or oral communications	5.67 1.53 3	6.00 1.00 3	6.00 0 1	6.00 1.00 5	6.25 1.04 8	5.98 .95 132
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	5.67 1.53 3	5.33 1.53 3	6.00 0 1	5.40 1.14 5	5.50 1.31 8	5.11 1.68 132
27. Take accurate notes which summarize the material presented from spoken conversations	4.66 2.31 3	6.33 .58 3	5.00 0 1	6.20 .84 5	5.88 2.10 8	5.60 1.48 131
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors 1. Work effectively under different kinds of supervision	7.00 0 3	6.33 .58 3	6.00 0 1	6.60 .89 5	6.38 .74 8	6.51 .66 131
2. Work without the need for close supervision	7.00 0 3	6.33 .58 3	7.00 0 1	6.60 .89 5	6.38 .74 8	6.53 .66 131
3. Work cooperatively as a member of a team	7.00 0 3	6.00 1.00 3	6.00 0 1	7.00 0 5	6.63 .52 8	6.53 .66 131
4. Get along and work effectively with people of different personalities	7.00 0 3	6.00 1.00 3	7.00 0 1	7.00 0 5	6.63 .52 8	6.62 .66 131
5. Show up regularly and on time for activities and appointments	7.00 0 3	6.6 .58 3	7.00 0 1	7.00 0 5	7.00 0 8	6.87 .34 131

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
Listening 24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=7.00 sd=0 n=3	5.75 1.36 12	5.89 1.28 18	6.00 1.00 3	6.33 1.16 3	7.00 0 3
25. Ask appropriate questions to clarify another's written or oral communications	7.00 0 3	6.42 .79 12	6.33 .77 18	6.00 1.00 3	6.33 1.16 3	7.00 0 3
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	6.67 .58 3	6.58 .67 12	6.56 .71 18	6.00 1.00 3	7.00 0 3	7.00 0 3
27. Take accurate notes which summarize the material presented from spoken conversations	6.67 .58 3	6.08 1.08 12	5.89 1.32 18	4.00 1.73 3	6.00 1.73 3	7.00 0 3
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors 1. Work effectively under different kinds of supervision	7.00 0 3	6.83 .39 12	6.67 .59 18	6.67 .58 3	6.33 1.16 3	7.00 0 3
2. Work without the need for close supervision	7.00 0 3	6.67 .65 12	6.50 .62 18	5.67 1.53 3	6.67 .58 3	6.33 1.16 3
3. Work cooperatively as a member of a team	7.00 0 3	6.83 .39 12	6.61 .50 18	7.00 0 2	7.00 0 3	7.00 0 3
4. Get along and work effectively with people of different personalities	7.00 0 3	6.83 .39 12	6.72 .46 18	6.00 1.73 3	7.00 0 3	7.00 0 3
5. Show up regularly and on time for activities and appointments	7.00 0 3	6.92 .29 12	6.83 .38 18	7.00 0 3	7.00 0 3	7.00 0 3

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CTW)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS	
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=5.00 sd=0 n=1	6.13 .99 8	6.00 0 1	5.60 1.14 5	6.00 1.15 57	
25. Ask appropriate questions to clarify another's written or oral communications	5.00 0 1	6.50 .76 8	7.00 0 1	6.40 .89 5	6.42 .78 57	
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	5.00 0 1	6.25 .89 8	6.00 0 1	6.40 .89 5	6.49 .74 57	
27. Take accurate notes which summarize the material presented from spoken conversations	5.00 0 1	5.50 1.51 8	6.00 0 1	5.80 1.30 5	5.86 1.32 57	
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.00 0 1	6.88 .35 8	7.00 0 1	6.80 .45 5	6.75 .51 57	
2. Work without the need for close supervision	6.00 0 1	6.88 .35 8	7.00 0 1	6.60 .55 5	6.58 .68 57	
3. Work cooperatively as a member of a team	6.00 0 1	6.75 .71 8	7.00 0 1	7.00 0 5	6.79 .46 56	
4. Get along and work effectively with people of different personalities	6.00 0 1	7.00 0 8	7.00 0 1	7.00 0 5	6.81 .52 57	
5. Show up regularly and on time for activities and appointments	6.00 0 1	7.00 0 8	7.00 0 1	7.00 0 5	6.91 .29 57	

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x̄=6.05 sd= .79 n-22	4.50 1.29 4	5.68 1.16 19	4.88 .99 8	4.50 2.12 2	6.00 .76 8
25. Ask appropriate questions to clarify another's written or oral communications	6.36 .79 22	5.25 1.50 4	5.85 1.09 20	5.50 1.41 8	4.50 2.12 2	6.00 .76 8
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	6.59 .67 22	4.50 1.00 4	5.05 1.76 20	5.25 1.04 8	4.00 1.41 2	6.50 .76 8
27. Take accurate notes which summarize the material presented from spoken conversations	5.50 .96 22	5.75 1.26 4	5.25 1.74 20	4.75 1.04 8	5.50 2.12 2	6.00 .76 8
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.82 .40 22	6.75 .50 4	6.90 .31 20	6.75 .46 8	7.00 0 2	6.63 .52 8
2. Work without the need for close supervision	6.77 .43 22	6.75 .50 4	6.95 .22 20	6.75 .46 8	6.50 .71 2	6.50 .54 8
3. Work cooperatively as a member of a team	6.91 .29 22	6.50 1.00 4	7.00 0 20	6.63 .74 8	6.00 1.41 2	6.75 .46 8
4. Get along and work effectively with people of different personalities	6.96 .21 22	6.50 1.00 4	6.95 .22 20	6.88 .35 8	6.00 1.41 2	6.88 .35 8
5. Show up regularly and on time for activities and appointments	6.96 .21 22	7.00 0 4	7.00 0 20	6.88 .35 8	7.00 0 2	6.88 .35 8

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
Listening 24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x̄=5.50 sd= .71 n=2	5.63 1.08 65				
25. Ask appropriate questions to clarify another's written or oral communications	5.50 2.12 2	5.91 1.12 66				
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	5.00 1.41 2	5.70 1.43 66				
27. Take accurate notes which summarize the material presented from spoken conversations	4.00 2.83 2	5.36 1.34 66				
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors 1. Work effectively under different kinds of supervision	7.00 0 2	6.82 .39 66				
2. Work without the need for close supervision	7.00 0 2	6.79 .41 66				
3. Work cooperatively as a member of a team	7.00 0 2	6.83 .48 66				
4. Get along and work effectively with people of different personalities	7.00 0 2	6.88 .42 66				
5. Show up regularly and on time for activities and appointments	7.00 0 2	6.95 .21 66				

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	$\bar{x}$=5.00 sd=1.23 n=5	4.50 .58 4	3.00 0 1	5.75 .96 4	4.50 1.40 20	4.98 1.37 41
25. Ask appropriate questions to clarify another's written or oral communications	5.00 1.58 5	4.50 1.29 4	3.00 0 1	6.25 .96 4	5.15 1.35 20	5.56 1.17 41
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	3.80 1.92 5	3.25 1.71 4	3.00 0 1	4.67 1.53 3	4.75 1.80 20	4.32 1.65 41
27. Take accurate notes which summarize the material presented from spoken conversations	5.00 2.35 5	4.75 2.63 4	3.00 0 1	5.25 1.71 4	4.60 1.79 20	5.37 1.39 41
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.40 .89 5	6.25 .96 4	5.00 0 1	6.75 .50 4	6.30 .80 20	6.27 .87 41
2. Work without the need for close supervision	6.60 .55 5	6.50 .58 4	5.00 0 1	6.75 .50 4	6.60 .68 20	6.49 .87 41
3. Work cooperatively as a member of a team	6.40 .89 5	6.25 .96 4	5.00 0 1	6.50 .58 4	6.35 .59 20	6.34 .88 41
4. Get along and work effectively with people of different personalities	6.40 .89 5	6.25 .96 4	5.00 0 1	6.75 .50 4	6.60 .60 20	6.39 .97 41
5. Show up regularly and on time for activities and appointments	6.25 .50 4	6.00 0 3	5.00 0 1	7.04 0 4	6.80 .41 20	6.71 .98 41

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	$\bar{x}$=4.50 sd=2.12 n=2	5.57 .98 7	4.50 .93 24	4.67 1.63 6	4.50 .71 2	4.60 .55 5
25. Ask appropriate questions to clarify another's written or oral communications	5.50 2.12 2	6.00 1.16 7	4.78 1.00 23	5.67 1.03 6	4.50 .71 2	5.60 1.14 5
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	2.00 1.41 2	5.00 1.16 7	3.88 1.08 24	4.17 1.72 6	4.50 .71 2	4.80 1.10 5
27. Take accurate notes which summarize the material presented from spoken conversations	3.00 1.41 2	6.29 .76 7	4.46 1.18 24	4.67 1.37 6	4.50 .71 2	5.60 .89 5
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.00 1.41 2	6.43 .54 7	6.46 .51 24	6.33 .82 6	6.50 .71 2	6.60 .55 5
2. Work without the need for close supervision	5.50 2.12 2	6.71 .49 7	6.38 .77 24	6.33 .52 6	7.00 0 2	6.80 .45 5
3. Work cooperatively as a member of a team	5.50 2.12 2	6.71 .49 7	6.67 .48 24	6.50 .55 6	7.00 0 2	7.00 0 5
4. Get along and work effectively with people of different personalities	5.00 1.41 2	6.57 .54 7	6.58 .50 24	6.50 .55 6	7.00 0 2	7.00 0 5
5. Show up regularly and on time for activities and appointments	6.50 .71 2	6.71 .49 7	6.71 .46 24	7.00 0 6	7.00 0 2	7.00 0 5

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=4.88 sd=1.17 n=25	5.10 1.37 10	4.67 .58 3	4.84 1.41 25	5.50 .71 2	4.65 1.54 17
25. Ask appropriate questions to clarify another's written or oral communications	5.52 1.30 25	5.90 1.10 10	5.00 1.00 3	5.32 1.55 25	5.50 .71 2	5.47 1.59 17
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	4.08 1.73 25	4.20 1.14 10	4.33 1.16 3	4.52 1.53 25	4.00 1.41 2	3.47 1.18 17
27. Take accurate notes which summarize the material presented from spoken conversations	5.24 1.20 25	5.80 1.14 10	5.00 1.00 3	5.54 1.44 24	6.00 0 2	4.35 1.84 17
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.28 1.02 25	6.20 .79 10	6.00 1.00 3	6.24 .97 25	6.00 0 2	6.47 .62 17
2. Work without the need for close supervision	6.52 .71 25	6.30 .82 10	6.33 .58 3	6.48 .65 25	7.00 0 2	6.53 .62 17
3. Work cooperatively as a member of a team	6.24 .97 25	6.40 .70 10	6.33 .58 3	6.28 .79 25	7.00 0 2	6.59 .51 17
4. Get along and work effectively with people of different personalities	6.20 1.00 25	6.40 .97 10	6.33 .58 3	6.32 .75 25	6.50 .71 2	6.59 .51 17
5. Show up regularly and on time for activities and appointments	6.77 .51 26	6.80 .63 10	6.67 .58 3	6.64 .57 25	6.50 .71 2	6.82 .39 17

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
COMMUNICATION SKILLS (continued)	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	$\bar{x}$=4.65 sd=1.27 n=23	5.20 1.10 5	4.04 1.40 26	6.50 .71 2	6.38 .74 8	4.00 0 1
25. Ask appropriate questions to clarify another's written or oral communications	5.48 1.08 23	6.00 1.23 5	4.77 1.42 26	6.50 .71 2	7.00 0 8	3.00 0 1
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	3.96 1.49 23	4.40 2.07 5	3.39 1.53 26	4.00 1.41 2	6.63 .74 8	1.00 0 1
27. Take accurate notes which summarize the material presented from spoken conversations	4.87 1.36 23	6.20 .45 5	4.19 1.55 26	5.00 2.83 2	5.00 1.60 8	1.00 0 1
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.26 .86 23	6.40 .55 5	5.96 1.08 26	7.00 0 2	6.50 1.07 8	5.00 0 1
2. Work without the need for close supervision	6.52 .59 23	6.60 .55 5	6.39 .90 26	6.50 .71 2	6.63 .52 8	6.00 0 1
3. Work cooperatively as a member of a team	6.00 1.31 23	6.00 1.00 5	6.31 .88 26	5.00 2.83 2	6.13 1.64 8	5.00 0 1
4. Get along and work effectively with people of different personalities	6.52 .73 23	6.40 .55 5	6.42 .76 26	6.50 .71 2	7.00 0 8	5.00 0 1
5. Show up regularly and on time for activities and appointments	6.91 .42 23	7.00 0 5	6.85 .46 26	7.00 0 2	7.00 0 8	6.00 0 1

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	$\bar{x}$=5.17 sd=1.17 n=6	5.50 .58 4	4.50 .80 12	5.50 .71 2	4.00 0 1	4.00 0 1
25. Ask appropriate questions to clarify another's written or oral communications	5.50 1.05 6	5.25 .96 4	5.50 1.24 12	5.50 2.12 2	4.00 0 1	6.00 0 1
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	4.40 .89 5	4.75 1.71 4	4.50 .80 12	5.00 1.41 2	2.00 0 1	4.00 0 1
27. Take accurate notes which summarize the material presented from spoken conversations	5.33 1.51 6	4.67 .58 3	4.17 1.27 12	4.00 2.83 2	2.00 0 1	6.00 0 1
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.33 .82 6	6.75 .50 4	6.50 .52 12	7.00 0 2	6.00 0 1	4.00 0 1
2. Work without the need for close supervision	6.83 .41 6	6.50 .58 4	6.25 .97 12	7.00 0 2	7.00 0 1	7.00 0 1
3. Work cooperatively as a member of a team	6.67 .52 6	6.75 .50 4	6.75 .62 12	7.00 0 2	3.00 0 1	6.00 0 1
4. Get along and work effectively with people of different personalities	6.83 .41 6	6.50 .58 4	6.83 .39 12	7.00 0 2	6.00 0 1	6.00 0 1
5. Show up regularly and on time for activities and appointments	7.00 0 6	6.25 .50 4	7.00 0 12	7.00 0 2	6.00 0 1	4.00 0 1

COMMUNICATION SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
Listening						
24. Restate or paraphrase a conversation to confirm one's own understanding of what was said	x=5.00 sd=0 n=1	4.00 1.73 3	6.25 1.50 4	4.81 1.29 302		5.13 1.32 596
25. Ask appropriate questions to clarify another's written or oral communications	6.00 0 1	3.67 2.31 3	6.75 .50 4	5.39 1.32 301		5.67 1.22 596
26. Attend to nonverbal cues such as eye contact, posture, and gestures for meanings in other's conversations	5.00 0 1	3.67 2.31 3	6.00 2.00 4	4.21 1.57 300		4.82 1.67 595
27. Take accurate notes which summarize the material presented from spoken conversations	5.00 0 1	3.67 2.31 3	6.33 1.16 3	4.93 1.54 299		5.21 1.51 592
INTERPERSONAL RELATIONS SKILLS						
Work Behaviors						
1. Work effectively under different kinds of supervision	6.00 0 1	6.67 .58 3	6.50 1.00 4	6.31 .84 302		6.46 .74 595
2. Work without the need for close supervision	7.00 0 1	6.67 .58 3	6.75 .50 4	6.50 .72 302		6.56 .67 595
3. Work cooperatively as a member of a team	7.00 0 1	6.67 .58 3	6.25 .96 4	6.36 .89 302		6.52 .79 594
4. Get along and work effectively with people of different personalities	7.00 0 1	6.67 .58 3	6.75 .50 4	6.48 .75 302		6.60 .68 595
5. Show up regularly and on time for activities and appointments	7.00 0 1	7.00 0 3	7.00 0 4	6.77 .58 301		6.82 .48 595

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
6. Work effectively when time, tension, or pressure are critical factors for successful performance	x̄=6.47 sd= .64 n=15	6.44 .63 16	6.50 .84 6	7.00 0 2	6.00 0 1	6.48 .64 40
7. See things from another's point of view	6.00 1.00 15	5.94 .77 16	6.17 .98 6	6.50 .71 2	6.00 0 1	6.03 .86 40
8. Engage appropriately in social interactions and situations	5.27 1.10 15	5.69 .87 16	5.83 .75 6	6.00 1.41 2	7.00 0 1	5.60 .98 40
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.33 .62 15	6.31 .87 16	7.00 0 6	7.00 0 2	7.00 0 1	6.48 .72 40
10. Plan, carry out, and complete activities at one's own initiation	6.00 .76 15	6.53 .64 15	6.00 .89 6	7.00 0 2	7.00 0 1	6.28 .76 39
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.47 .83 15	5.75 .93 16	5.33 .82 6	5.00 1.41 2	5.00 0 1	5.53 .88 40
12. Follow instructions or directions in the performance of a specific task	6.27 .80 15	6.63 .50 16	6.67 .52 6	7.00 0 2	7.00 0 1	6.53 .64 40
13. Demonstrate to someone how to perform a specific task	5.53 .99 15	5.94 1.06 16	5.17 .75 6	5.00 2.83 2	6.00 0 1	5.63 1.08 40
14. Assign others to carry out specific tasks	5.13 .83 15	5.63 .96 16	5.17 .75 6	4.50 2.12 2	5.00 0 1	5.30 .94 40

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=7.00 sd=0 n=2	6.75 .50 4	7.00 0 1	6.47 .70 19	6.57 .54 7	6.54 .69 28
7. See things from another's point of view	7.00 0 2	6.75 .50 4	7.00 0 1	6.37 .68 19	6.29 .76 7	5.86 1.33 28
8. Engage appropriately in social interactions and situations	6.50 .71 2	6.25 .96 4	7.00 0 1	6.00 1.05 19	6.14 .38 7	5.04 1.40 28
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	7.00 0 2	7.00 0 4	7.00 0 1	6.90 .32 19	6.29 .76 7	6.00 1.41 28
10. Plan, carry out, and complete activities at one's own initiation	7.00 0 2	6.75 .50 4	7.00 0 1	6.53 .61 19	6.43 .79 7	6.21 1.26 28
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	6.50 .71 2	6.00 .82 4	6.00 0 1	5.47 1.12 19	5.86 1.46 7	5.68 1.22 28
12. Follow instructions or directions in the performance of a specific task	7.00 0 2	7.00 0 4	7.00 0 1	6.74 .45 19	6.71 .76 7	6.75 .44 28
13. Demonstrate to someone how to perform a specific task	7.00 0 2	6.25 1.50 4	7.00 0 1	5.53 1.07 19	6.14 1.07 7	5.75 1.30 28
14. Assign others to carry out specific tasks	6.50 .71 2	5.50 1.29 4	7.00 0 1	5.05 1.13 19	5.57 1.40 7	5.07 1.63 28

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.00 sd=2.24 n=7	7.00 0 1	6.00 0 1	7.00 0 1	6.89 .33 26	6.57 .65 14
7. See things from another's point of view	4.86 1.77 7	5.00 0 1	6.00 0 1	6.00 0 1	6.54 .65 26	6.21 .80 14
8. Engage appropriately in social interactions and situations	4.57 2.37 7	6.00 0 1	6.00 0 1	5.00 0 1	6.19 1.13 26	5.93 .92 14
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	5.14 2.27 7	6.00 0 1	6.00 0 1	7.00 0 1	6.58 .58 26	6.50 .86 14
10. Plan, carry out, and complete activities at one's own initiation	5.86 1.07 7	5.00 0 1	7.00 0 1	6.00 0 1	6.58 .64 26	6.21 .70 14
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	4.86 1.57 7	5.00 0 1	6.00 0 1	4.00 0 1	5.89 1.31 26	5.36 1.34 14
12. Follow instructions or directions in the performance of a specific task	6.71 .49 7	7.00 0 1	7.00 0 1	7.00 0 1	6.77 .51 26	6.71 .47 14
13. Demonstrate to someone how to perform a specific task	6.00 .82 7	7.00 0 1	7.00 0 1	5.00 0 [illegible]	6.08 1.06 26	5.53 .99 15
14. Assign others to carry out specific tasks	4.57 1.51 7	5.00 0 1	6.00 0 1	[illegible] 0 1	5.81 1.33 26	4.86 1.35 14

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
6. Work effectively when time, tension, or pressure are critical factors for successful performance	x=6.33 sd= .58 n=3	6.33 .58 3	7.00 0 1	6.40 .89 5	6.75 .46 8	6.60 .76 131
7. See things from another's point of view	6.33 .58 3	6.33 .58 3	6.00 0 1	6.00 1.00 5	6.13 .84 8	6.17 1.01 131
8. Engage appropriately in social interactions and situations	6.67 .58 3	5.67 1.53 3	7.00 0 1	6.20 .84 5	6.00 .93 8	5.79 1.27 131
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	7.00 0 3	6.00 1.00 3	7.00 0 1	6.60 .55 5	6.88 .35 8	6.44 1.04 131
10. Plan, carry out, and complete activities at one's own initiation	6.67 .58 3	6.67 .58 3	7.00 0 1	6.20 1.10 5	6.63 .52 8	6.41 .86 131
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.67 1.16 3	5.67 1.16 3	5.00 0 1	5.80 .84 5	6.00 .93 8	5.65 1.20 131
12. Follow instructions or directions in the performance of a specific task	6.67 .58 3	6.33 .58 3	7.00 0 1	7.00 0 5	7.00 0 8	6.78 .45 131
13. Demonstrate to someone how to perform a specific task	6.00 1.00 3	5.67 1.16 3	5.00 0 1	6.40 .89 5	5.75 1.17 8	5.87 1.10 132
14. Assign others to carry out specific tasks	5.00 1.00 3	5.67 1.16 3	5.00 0 1	5.40 1.52 5	5.25 1.49 8	5.30 1.39 131

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=7.00 sd=0 n=3	6.83 .39 12	6.78 .55 18	7.00 0 3	7.00 0 3	7.00 0 3
7. See things from another's point of view	7.00 0 3	6.75 .45 12	6.78 .43 18	6.67 .58 3	7.00 0 3	6.67 .58 3
8. Engage appropriately in social interactions and situations	7.00 0 3	6.58 .79 12	6.17 1.38 18	6.00 1.73 3	6.00 1.00 3	7.00 0 3
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	7.00 0 3	6.67 .89 12	6.44 .86 18	7.00 0 3	7.00 0 3	7.00 0 3
10. Plan, carry out, and complete activities at one's own initiation	7.00 0 3	6.17 1.19 12	6.00 1.14 18	6.33 1.16 3	6.00 1.00 3	5.67 1.53 3
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	7.00 0 3	5.67 1.07 12	4.94 1.73 18	5.67 1.53 3	3.67 2.52 3	6.00 1.73 3
12. Follow instructions or directions in the performance of a specific task	7.00 0 3	6.83 .39 12	6.78 .43 18	7.00 0 3	7.00 0 3	7.00 0 3
13. Demonstrate to someone how to perform a specific task	7.00 0 3	6.50 .67 12	5.67 1.37 18	5.67 1.53 3	5.33 2.08 3	6.33 1.16 3
14. Assign others to carry out specific tasks	6.67 .58 3	5.00 1.13 12	3.77 1.68 17	3.67 1.16 3	2.67 2.08 3	3.67 3.06 3

	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
INTERPERSONAL RELATIONS SKILLS (continued)	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
6. Work effectively when time, tension, or pressure are critical factors for successful performance	x̄=6.00 sd=0 n=1	6.75 .71 8	6.00 0 1	6.60 .55 5	6.79 .49 57
7. See things from another's point of view	5.00 0 1	6.75 .71 8	6.00 0 1	6.60 .55 5	6.72 .53 57
8. Engage appropriately in social interactions and situations	5.00 0 1	6.38 .74 8	7.00 0 1	6.20 .45 5	6.35 1.03 57
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.00 0 1	6.88 .35 8	7.00 0 1	6.40 .55 5	6.67 .69 57
10. Plan, carry out, and complete activities at one's own initiation	6.00 0 1	6.50 .76 8	7.00 0 1	5.60 1.52 5	6.14 1.09 57
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	4.00 0 1	5.50 2.00 8	5.00 0 1	5.80 .45 5	5.37 1.59 57
12. Follow instructions or directions in the performance of a specific task	6.00 0 1	6.88 .35 8	7.00 0 1	6.80 .45 5	6.84 .37 57
13. Demonstrate to someone how to perform a specific task	4.00 0 1	5.88 1.46 8	6.00 0 1	6.40 .55 5	6.00 1.23 57
14. Assign others to carry out specific tasks	4.00 0 1	5.00 1.92 7	5.00 0 1	4.60 1.67 5	4.38 1.75 55

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		HOME ECONOMICS OCCUPATIONS				
INTERPERSONAL RELATIONS SKILLS (continued)	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.77 sd= .43 n=22	6.50 1.00 4	6.95 .22 20	6.63 .74 8	6.00 1.41 2	6.88 .35 8
7. See things from another's point of view	6.77 .53 22	6.50 1.00 4	6.40 .75 20	6.38 .74 8	6.00 1.41 2	6.88 .35 8
8. Engage appropriately in social interactions and situations	6.82 .40 22	6.25 .96 4	6.15 1.14 20	6.38 .92 8	6.00 1.41 2	6.88 .35 8
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	7.00 0 22	7.00 0 4	6.70 .47 20	6.75 .71 8	7.00 0 2	6.88 .35 8
10. Plan, carry out, and complete activities at one's own initiation	6.86 .35 22	6.75 .50 4	6.65 .81 20	6.13 .84 8	6.50 .71 2	6.75 .46 8
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	6.33 .97 21	5.75 .96 4	6.30 .87 20	5.75 .89 8	5.00 0 2	6.50 .54 8
12. Follow instructions or directions in the performance of a specific task	6.91 .43 22	7.00 0 4	6.90 .31 20	6.75 .46 8	7.00 0 2	6.88 .35 8
13. Demonstrate to someone how to perform a specific task	6.50 .86 22	5.25 .96 4	6.47 .91 19	6.00 .93 8	4.50 .71 2	6.75 .46 8
14. Assign others to carry out specific tasks	5.76 1.22 21	4.25 2.36 4	6.05 1.05 20	4.63 .52 8	2.50 2.12 2	6.50 .54 8

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		HOME ECONOMICS OCCUPATIONS				
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.00 sd=0 n=2	6.76 .53 66				
7. See things from another's point of view	6.50 .71 2	6.58 .68 66				
8. Engage appropriately in social interactions and situations	7.00 0 2	6.52 .85 66				
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	7.00 0 2	6.86 .39 66				
10. Plan, carry out, and complete activities at one's own initiation	6.50 .71 2	6.67 .64 66				
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.00 0 2	6.15 .91 65				
12. Follow instructions or directions in the performance of a specific task	6.50 .71 2	6.88 .37 66				
13. Demonstrate to someone how to perform a specific task	5.50 .71 2	6.29 .95 65				
14. Assign others to carry out specific tasks	4.50 .71 2	5.57 1.39 65				

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.75 sd= .50 n=4	6.67 .58 3	5.00 0 1	6.50 .58 4	6.60 .60 20	6.34 .88 41
7. See things from another's point of view	5.75 1.50 4	5.33 1.53 3	4.00 0 1	6.25 .50 4	6.10 1.02 20	5.81 1.21 41
8. Engage appropriately in social interactions and situations	4.75 1.71 4	4.00 1.00 3	4.00 0 1	5.75 .50 4	5.35 .99 20	5.10 1.22 41
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.25 .96 4	6.00 1.00 3	3.00 0 1	6.50 .58 4	6.35 .88 20	6.42 .77 41
10. Plan, carry out, and complete activities at one's own initiation	6.50 .58 4	6.33 .58 3	3.00 0 1	6.50 .58 4	6.20 1.06 20	6.27 .92 41
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.50 1.29 4	5.00 1.00 3	3.00 0 1	5.50 1.73 4	5.40 1.35 20	5.34 1.13 41
12. Follow instructions or directions in the performance of a specific task	6.75 .50 4	6.67 .58 3	3.00 0 1	6.75 .50 4	6.50 .76 20	6.46 1.00 41
13. Demonstrate to someone how to perform a specific task	5.50 1.00 4	5.00 0 3	3.00 0 1	5.25 1.50 4	5.80 1.15 20	5.66 1.06 41
14. Assign others to carry out specific tasks	4.75 1.71 4	4.00 1.00 3	3.00 0 1	5.00 1.41 4	5.25 1.37 20	5.00 1.16 41

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
6. Work effectively when time, tension, or pressure are critical factors for successful performance	x=5.50 sd=2.12 n=2	6.86 .38 7	6.38 .65 24	6.33 .52 6	7.00 0 2	6.60 .55 5
7. See things from another's point of view	3.50 .71 2	6.57 .79 7	6.13 .63 23	6.17 .75 6	6.50 .71 2	6.40 .55 5
8. Engage appropriately in social interactions and situations	2.50 .71 2	6.00 .82 7	5.54 .88 24	5.67 1.21 6	5.50 .71 2	5.40 .55 5
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	5.00 2.83 2	6.43 .54 7	6.25 .74 24	6.50 .55 6	6.50 .71 2	6.80 .45 5
10. Plan, carry out, and complete activities at one's own initiation	5.50 .71 2	6.86 .38 7	6.25 .69 23	6.00 .89 6	6.00 1.41 2	6.60 .55 5
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	4.00 1.41 2	6.14 .69 7	5.63 1.31 24	6.00 .89 6	6.50 .71 2	6.60 .55 5
12. Follow instructions or directions in the performance of a specific task	6.50 .71 2	6.86 .38 7	6.42 .58 24	6.67 .52 6	6.50 .71 2	6.80 .45 5
13. Demonstrate to someone how to perform a specific task	4.00 1.41 2	5.71 .95 7	5.71 1.30 24	6.17 1.17 6	6.50 .71 2	6.40 1.34 5
14. Assign others to carry out specific tasks	4.00 1.41 2	5.71 .95 7	5.46 1.35 24	5.33 1.21 6	5.00 0 2	5.40 1.14 5

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupation	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.46 sd= .71 n=26	6.40 .97 10	6.00 1.00 3	6.16 1.14 25	5.50 .71 2	6.59 .62 17
7. See things from another's point of view	6.08 .94 26	6.00 1.16 10	5.67 .58 3	5.68 .99 25	6.50 .71 2	5.82 1.07 17
8. Engage appropriately in social interactions and situations	4.81 1.30 26	4.60 1.65 10	5.33 1.16 3	5.20 1.23 25	5.00 1.41 2	5.06 1.39 17
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.35 1.02 26	6.20 .92 10	6.00 0 3	6.16 .85 25	5.50 .71 2	6.12 1.22 17
10. Plan, carry out, and complete activities at one's own initiation	6.19 .90 26	6.40 .70 10	6.00 0 3	6.24 1.30 25	6.00 0 2	6.13 1.09 16
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.23 1.31 26	5.30 1.25 10	6.00 0 3	5.28 1.14 25	4.50 2.12 2	5.18 1.33 17
12. Follow instructions or directions in the performance of a specific task	6.73 .53 26	6.50 .53 10	6.00 0 3	6.69 .56 25	6.50 .71 2	6.65 .49 17
13. Demonstrate to someone how to perform a specific task	5.42 1.39 26	5.10 1.10 10	5.67 .58 3	5.76 .97 25	4.50 .71 2	5.18 1.38 17
14. Assign others to carry out specific tasks	4.46 1.56 26	4.40 1.27 10	5.67 .58 3	4.92 1.32 25	3.50 2.12 2	4.77 1.39 17

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=6.61 sd= .72 n=23	6.80 .45 5	6.58 .64 26	7.00 0 2	6.75 .46 8	7.00 0 1
7. See things from another's point of view	5.78 1.09 23	6.00 .71 5	5.65 1.23 26	6.50 .71 2	6.50 .76 8	4.00 0 1
8. Engage appropriately in social interactions and situations	5.09 1.13 23	5.40 1.14 5	5.24 1.45 25	4.00 1.41 2	6.50 .76 8	3.00 0 1
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.39 .66 23	6.40 .55 5	6.20 1.08 25	7.00 0 2	6.88 .35 8	6.00 0 1
10. Plan, carry out, and complete activities at one's own initiation	6.17 1.11 23	6.80 .45 5	5.84 1.38 25	7.00 0 2	6.86 .38 7	6.00 0 1
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	5.39 1.41 23	5.40 1.52 5	5.50 1.33 26	6.50 .71 2	5.13 1.36 8	5.00 0 1
12. Follow instructions or directions in the performance of a specific task	6.39 .89 23	7.00 0 5	6.46 .76 26	7.00 0 2	6.88 .35 8	6.00 0 1
13. Demonstrate to someone how to perform a specific task	5.57 1.08 23	5.60 1.52 5	5.62 1.10 26	6.00 1.41 2	5.50 1.69 8	5.00 0 1
14. Assign others to carry out specific tasks	5.17 1.11 23	5.00 1.41 5	5.04 1.37 26	6.00 1.41 2	4.13 1.55 8	5.00 0 1

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
6. Work effectively when time, tension, or pressure are critical factors for successful performance	$\bar{x}$=7.00 sd=0 n=6	5.75 .50 4	6.42 .79 12	6.00 0 2	6.00 0 1	5.00 0 1
7. See things from another's point of view	6.67 .52 6	5.75 .96 4	6.33 .78 12	6.50 .71 2	3.00 0 1	5.00 0 1
8. Engage appropriately in social interactions and situations	5.83 .98 6	6.50 .58 4	5.58 1.08 12	7.00 0 2	4.00 0 1	5.00 0 1
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.83 .41 6	6.50 .58 4	6.83 .39 12	7.00 0 2	6.00 0 1	5.00 0 1
10. Plan, carry out, and complete activities at one's own initiation	6.83 .41 6	5.75 1.26 4	5.83 .84 12	6.50 .71 2	4.00 0 1	5.00 0 1
Instructional and Supervisory Conversations						
11. Instruct or direct someone in the performance of a specific task	6.00 .63 6	5.25 1.71 4	4.83 1.19 12	5.00 0 2	3.00 0 1	5.00 0 1
12. Follow instructions or directions in the performance of a specific task	6.67 .82 6	6.25 .50 4	6.83 .39 12	6.50 .71 2	6.00 0 1	6.00 0 1
13. Demonstrate to someone how to perform a specific task	5.83 .75 6	5.25 1.50 4	5.17 1.40 12	5.50 .71 2	3.00 0 1	6.00 0 1
14. Assign others to carry out specific tasks	5.50 .55 6	5.50 1.92 4	4.50 1.38 12	4.50 .71 2	2.00 0 1	6.00 0 1

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
6. Work effectively when time, tension, or pressure are critical factors for successful performance	x=6.00 sd=0 n=1	5.67 2.31 3	7.00 0 4	6.45 .79 301		6.55 .73 595
7. See things from another's point of view	6.00 0 1	5.33 2.89 3	6.50 1.00 4	5.93 1.07 300		6.14 1.00 594
8. Engage appropriately in social interactions and situations	5.00 0 1	5.67 2.31 3	5.75 .96 4	5.24 1.25 300		5.64 1.26 594
9. Take responsibility and be accountable for the effects of one's own judgments, decisions, and actions	6.00 0 1	5.67 2.31 3	7.00 0 4	6.34 .88 300		6.46 .87 594
10. Plan, carry out, and complete activities at one's own initiation	6.00 0 1	6.33 1.16 3	6.75 .50 4	6.22 .99 297		6.31 .94 590
Instructional and Supervisory Conversations 11. Instruct or direct someone in the performance of a specific task	6.00 0 1	5.33 2.89 3	6.50 .58 4	5.41 1.27 301		5.55 1.25 594
12. Follow instructions or directions in the performance of a specific task	6.00 0 1	6.67 .58 3	6.50 1.00 4	6.56 .71 301		6.67 .61 595
13. Demonstrate to someone how to perform a specific task	6.00 0 1	5.67 2.31 3	5.50 1.29 4	5.56 1.20 301		5.75 1.17 595
14. Assign others to carry out specific tasks	6.00 0 1	5.00 3.46 3	5.75 .96 4	4.97 1.35 301		5.07 1.41 592

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
15. Speak with others in a relaxed and self-confident manner	x̄=5.20 sd= .94 n=15	5.63 1.03 16	5.67 .52 6	4.50 2.12 2	7.00 0 1	5.45 1.01 40
16. Compliment and provide constructive feedback to others at appropriate times	5.20 .86 15	5.75 1.07 16	5.50 .55 6	6.00 0 2	6.00 0 1	5.53 .91 40
Conversations						
17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.93 .88 15	6.25 .93 16	6.50 .55 6	6.50 .71 2	7.00 0 1	6.20 .85 40
18. Initiate and maintain task focused or friendly conversations with another individual	5.00 1.00 15	5.50 1.41 16	5.50 .84 6	3.50 3.54 2	7.00 0 1	5.25 1.35 40
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.87 1.25 15	5.19 1.33 16	5.17 .75 6	3.00 2.83 2	4.00 0 1	4.93 1.33 40
20. Join in task focused or friendly group conversations	5.20 1.21 15	5.31 .95 16	5.33 .52 6	4.00 1.41 2	7.00 0 1	5.25 1.06 40
REASONING SKILLS						
Verbal Reasoning						
1. Generate or conceive of new or innovative ideas	5.13 .92 15	5.60 1.12 15	4.50 .84 6	6.00 0 1	4.00 0 1	5.21 1.04 38
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.07 .80 15	6.13 .74 15	5.67 .82 6	6.00 0 1	7.00 0 1	6.05 .77 38

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Advertising Services	General Merchandise Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=7.00 sd=0 n=2	6.25 1.50 4	7.00 0 1	5.95 1.13 19	6.00 .58 7	5.14 1.58 28
16. Compliment and provide constructive feedback to others at appropriate times	6.50 .71 2	6.00 .82 4	7.00 0 1	5.58 1.02 19	5.43 .98 7	5.04 1.62 28
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.50 .71 2	6.75 .50 4	7.00 0 1	6.58 .51 19	6.00 1.00 7	5.50 1.53 28
18. Initiate and maintain task focused or friendly conversations with another individual	6.50 .71 2	6.25 .96 4	7.00 0 1	5.84 .96 19	5.86 1.07 7	5.00 1.39 28
19. Initiate, maintain, and draw others into task focused or friendly group conversations	5.50 2.12 2	5.50 1.29 4	7.00 0 1	5.47 .84 19	5.71 1.25 7	4.89 1.42 28
20. Join in task focused or friendly group conversations	6.00 1.41 2	5.50 1.29 4	7.00 0 1	5.32 1.00 19	5.43 .98 7	4.96 1.40 28
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	6.50 .71 2	6.50 .58 4	7.00 0 1	4.95 1.22 19	5.71 .76 7	5.68 1.36 28
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	7.00 0 2	7.00 0 4	7.00 0 1	6.00 .75 19	6.57 .54 7	6.36 .91 28

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	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=4.43 sd=2.30 n=7	7.00 0 1	5.00 0 1	4.00 0 1	6.27 .92 26	5.71 1.27 14
16. Compliment and provide constructive feedback to others at appropriate times	4.29 2.36 7	7.00 0 1	5.00 0 1	4.00 0 1	6.00 1.02 26	5.57 1.09 14
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.14 2.34 7	7.00 0 1	6.00 0 1	5.00 0 1	6.50 .86 26	6.20 .86 15
18. Initiate and maintain task focused or friendly conversations with another individual	5.29 1.89 7	7.00 0 1	6.00 0 1	4.00 0 1	5.96 1.22 26	5.73 1.03 15
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.43 1.99 7	7.00 0 1	7.00 0 1	4.00 0 1	5.73 1.25 26	5.40 1.06 15
20. Join in task focused or friendly group conversations	4.57 2.07 7	7.00 0 1	5.00 0 1	4.00 0 1	5.62 1.24 26	5.33 1.11 15
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	5.57 1.40 7	4.00 0 1	5.00 0 1	2.00 0 1	5.08 1.35 26	4.50 .94 14
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.71 .49 7	6.00 0 1	7.00 0 1	5.00 0 1	6.19 .85 26	5.60 1.18 15

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
15. Speak with others in a relaxed and self-confident manner	x=6.00 sd=1.73 n=3	5.33 1.53 3	7.00 0 1	6.00 1.00 5	6.00 1.20 8	5.76 1.37 131
16. Compliment and provide constructive feedback to others at appropriate times	5.33 1.16 3	5.33 1.53 3	5.00 0 1	5.80 1.30 5	5.38 1.41 8	5.48 1.34 131
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.67 .58 3	6.00 1.00 3	7.00 0 1	6.80 .45 5	6.63 .74 8	6.18 1.17 132
18. Initiate and maintain task focused or friendly conversations with another individual	5.67 1.53 3	5.33 1.53 3	6.00 0 1	6.20 1.30 5	5.88 .99 8	5.67 1.25 132
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.67 1.16 3	5.33 1.53 3	6.00 0 1	6.20 1.30 5	5.50 1.07 8	5.39 1.29 132
20. Join in task focused or friendly group conversations	5.67 1.53 3	5.33 1.53 3	5.00 0 1	5.80 1.30 5	5.63 1.06 8	5.34 1.27 132
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	4.67 1.16 3	4.67 1.16 3	6.00 0 1	5.00 1.58 5	5.25 1.04 8	5.23 1.30 131
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.33 1.16 3	6.00 0 3	7.00 0 1	6.40 .55 5	6.50 .76 8	6.25 .87 132

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
15. Speak with others in a relaxed and self-confident manner	x=7.00	6.08	6.39	6.00	6.00	6.33
	sd=0	.90	.78	1.00	1.73	1.16
	n=3	12	18	3	3	3
16. Compliment and provide constructive feedback to others at appropriate times	6.67	6.08	6.00	6.33	6.00	6.00
	.58	1.00	1.03	1.16	1.00	1.73
	3	12	18	3	3	3
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.67	6.58	6.56	7.00	7.00	6.67
	.58	.90	.78	0	0	.58
	3	12	18	3	3	3
18. Initiate and maintain task focused or friendly conversations with another individual	6.67	6.25	5.89	6.67	5.67	6.67
	.58	1.06	1.18	.58	1.16	.58
	3	12	18	3	3	3
19. Initiate, maintain, and draw others into task focused or friendly group conversations	6.67	5.83	5.39	6.33	5.33	6.00
	.58	1.40	1.46	1.16	1.53	1.73
	3	12	18	3	3	3
20. Join in task focused or friendly group conversations	6.67	5.92	5.61	6.33	6.00	6.00
	.58	1.38	1.38	1.16	1.73	1.73
	3	12	18	3	3	3
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	6.33	4.75	4.39	4.33	4.67	4.33
	.58	1.36	1.20	.58	1.53	.58
	3	12	18	3	3	3
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.67	6.75	5.78	6.33	6.00	6.00
	.58	.62	1.11	.58	1.00	1.73
	3	12	18	3	3	3

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
15. Speak with others in a relaxed and self-confident manner	x=6.00	6.50	7.00	5.80	6.28
	sd=0	.54	0	.45	.82
	n=1	8	1	5	57
16. Compliment and provide constructive feedback to others at appropriate times	6.00	5.88	6.00	6.20	6.07
	0	.84	0	.84	.94
	1	8	1	5	57
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.00	6.75	7.00	6.60	6.65
	0	.46	0	.55	.67
	1	8	1	5	57
18. Initiate and maintain task focused or friendly conversations with another individual	4.00	6.25	7.00	6.40	6.16
	0	.89	0	.55	1.01
	1	8	1	5	57
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.00	5.88	4.00	5.80	5.68
	0	.84	0	.84	1.28
	1	8	1	5	57
20. Join in task focused or friendly group conversations	6.00	6.00	7.00	5.80	5.91
	0	.93	0	.84	1.21
	1	8	1	5	57
REASONING SKILLS					
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	4.00	4.88	4.00	4.60	4.65
	0	.84	0	.55	1.11
	1	8	1	5	57
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	4.00	5.63	7.00	5.80	6.05
	0	.74	0	1.30	1.04
	1	8	1	5	57

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		HOME ECONOMICS OCCUPATIONS				
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
15. Speak with others in a relaxed and self-confident manner	x=6.82 sd= .50 n=22	6.25 .50 4	5.85 1.31 20	6.25 .71 8	6.50 .71 2	6.75 .46 8
16. Compliment and provide constructive feedback to others at appropriate times	6.64 .73 22	5.50 1.29 4	5.50 1.50 20	5.50 1.07 8	4.50 .71 2	6.50 .54 8
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.86 .35 22	6.50 1.00 4	6.60 .68 20	6.63 .52 8	6.00 1.41 2	6.75 .46 8
18. Initiate and maintain task focused or friendly conversations with another individual	6.68 .57 22	6.50 .58 4	5.75 1.65 20	6.25 1.04 8	7.00 0 2	6.75 .46 8
19. Initiate, maintain, and draw others into task focused or friendly group conversations	6.59 .73 22	5.00 .82 4	5.10 1.71 20	5.63 1.06 8	4.50 .71 2	6.63 .52 8
20. Join in task focused or friendly group conversations	6.50 .80 22	5.25 1.26 4	5.30 1.75 20	5.63 1.06 8	5.50 2.12 2	6.63 .52 8
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	5.82 1.18 22	5.25 .50 4	5.32 1.16 19	4.88 .84 8	5.00 0 2	6.13 .84 8
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.32 1.04 22	6.25 .96 4	5.90 .97 20	5.88 .99 8	6.00 1.41 2	6.13 .99 8

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS HOME ECONOMICS OCCUPATIONS Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
15. Speak with others in a relaxed and self-confident manner	x̄=5.50 sd=2.12 n=2	6.36 .97 66				
16. Compliment and provide constructive feedback to others at appropriate times	5.00 1.41 2	5.96 1.22 66				
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.50 .71 2	6.68 .59 66				
18. Initiate and maintain task focused or friendly conversations with another individual	5.50 2.12 2	6.32 1.15 66				
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.00 0 2	5.79 1.37 66				
20. Join in task focused or friendly group conversations	5.50 2.12 2	5.91 1.34 66				
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	4.00 0 2	5.48 1.11 65				
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.00 1.41 2	6.09 .99 66				

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
15. Speak with others in a relaxed and self-confident manner	x=4.50 sd=1.73 n=4	3.67 .58 3	3.00 0 1	4.75 1.89 4	5.25 1.07 20	5.42 .97 41
16. Compliment and provide constructive feedback to others at appropriate times	5.00 2.16 4	4.33 2.08 3	3.00 0 1	4.75 1.89 4	5.30 1.17 20	5.12 1.35 41
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.25 1.71 4	4.67 1.53 3	5.00 0 1	6.00 .82 4	5.85 1.09 20	5.83 1.16 41
18. Initiate and maintain task focused or friendly conversations with another individual	5.25 2.36 4	4.67 2.52 3	3.00 0 1	5.25 1.50 4	5.25 1.16 20	5.29 1.17 41
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.50 3.00 4	3.67 3.06 3	3.00 0 1	5.00 1.41 4	4.95 1.23 20	4.66 1.32 41
20. Join in task focused or friendly group conversations	4.75 2.63 4	4.00 2.65 3	3.00 0 1	5.75 .50 4	4.70 1.38 20	4.90 1.26 41
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	5.40 .89 5	5.25 .96 4	3.00 0 1	4.75 1.26 4	5.80 1.06 20	4.90 1.48 41
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	5.80 1.30 5	5.50 1.29 4	3.00 0 1	6.75 .50 4	6.35 .59 20	6.15 .94 41

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=4.00 sd=1.41 n-2	6.00 1.00 7	5.61 .99 23	5.67 1.03 6	6.50 .71 2	5.60 .55 5
16. Compliment and provide constructive feedback to others at appropriate times	5.00 2.83 2	5.71 .95 7	5.22 1.38 23	5.67 1.03 6	4.50 .71 2	5.20 .84 5
Conversations						
17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.00 0 2	6.57 .79 7	6.00 .93 24	6.17 .41 6	6.50 .71 2	6.00 .71 5
18. Initiate and maintain task focused or friendly conversations with another individual	3.00 1.41 2	5.86 .90 7	5.42 1.10 24	5.50 1.05 6	5.50 .71 2	4.80 1.30 5
19. Initiate, maintain, and draw others into task focused or friendly group conversations	3.50 .71 2	5.86 .90 7	5.13 1.42 24	5.33 1.03 6	5.50 .71 2	4.40 1.34 5
20. Join in task focused or friendly group conversations	2.50 .71 2	5.57 1.13 7	5.21 1.14 24	5.33 .82 6	6.00 0 2	5.00 1.58 5
REASONING SKILLS						
Verbal Reasoning						
1. Generate or conceive of new or innovative ideas	4.50 2.12 2	7.00 0 7	5.00 1.24 23	5.33 .82 6	6.50 .71 2	6.20 .84 5
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.50 .71 2	6.57 .54 7	5.91 .67 23	5.83 .75 6	6.50 .71 2	6.60 .89 5

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=5.00 sd=1.27 n=26	5.10 1.29 10	5.67 .58 3	5.36 1.41 25	6.50 .71 2	4.71 1.49 17
16. Compliment and provide constructive feedback to others at appropriate times	4.89 1.58 26	5.20 1.23 10	5.33 .58 3	5.28 1.21 25	5.00 0 2	4.94 1.56 17
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.15 1.01 26	5.20 1.40 10	5.00 0 3	5.80 1.08 25	5.50 .71 2	6.00 1.12 17
18. Initiate and maintain task focused or friendly conversations with another individual	4.64 1.58 25	4.60 1.17 10	5.33 .58 3	5.08 1.29 25	4.50 2.12 2	4.71 1.90 17
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.48 1.69 25	4.10 1.45 10	5.33 .58 3	4.80 1.44 25	4.00 2.83 2	4.12 1.58 17
20. Join in task focused or friendly group conversations	4.52 1.50 25	4.30 1.49 10	5.33 .58 3	4.64 1.55 25	5.00 1.41 2	4.47 1.55 17
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	5.77 .95 26	5.20 1.32 10	5.67 .58 3	5.64 1.08 25	6.00 1.41 2	4.65 1.77 17
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.31 .88 26	6.20 .63 10	6.00 0 3	6.32 .95 25	6.50 .71 2	6.06 .96 17

INTERPERSONAL RELATIONS SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=5.00 sd= .80 n=23	5.20 1.48 5	4.96 1.18 26	5.50 2.12 2	6.63 .74 8	4.00 0 1
16. Compliment and provide constructive feedback to others at appropriate times	4.87 1.22 23	5.00 1.58 5	4.73 1.37 26	6.00 1.41 2	6.63 .74 8	2.00 0 1
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.65 .89 23	6.20 .84 5	5.54 1.24 26	7.00 0 2	6.38 .92 8	3.00 0 1
18. Initiate and maintain task focused or friendly conversations with another individual	4.78 .95 23	4.80 1.64 5	4.62 1.53 26	5.00 1.41 2	6.38 .74 8	2.00 0 1
19. Initiate, maintain, and draw others into task focused or friendly group conversations	4.61 1.03 23	4.80 1.64 5	4.54 1.53 26	5.00 1.41 2	5.38 1.60 8	1.00 0 1
20. Join in task focused or friendly group conversations	4.52 .95 23	5.00 1.58 5	4.81 1.63 26	4.50 .71 2	5.63 1.30 8	2.00 0 1
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	5.30 1.11 23	5.20 1.10 5	5.08 1.41 26	6.00 0 2	5.38 1.06 8	6.00 0 1
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.22 .90 23	6.00 1.23 5	5.85 1.16 26	7.00 0 2	6.25 .71 8	5.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
15. Speak with others in a relaxed and self-confident manner	x=5.67 sd= .52 n=6	5.50 1.73 4	5.67 .99 12	5.50 2.12 2	3.00 0 1	5.00 0 1
16. Compliment and provide constructive feedback to others at appropriate times	5.50 1.05 6	4.50 2.65 4	4.83 1.59 12	5.00 1.41 2	3.00 0 1	5.00 0 1
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	5.83 .41 6	5.75 .50 4	6.33 .49 12	6.50 .71 2	4.00 0 1	5.00 0 1
18. Initiate and maintain task focused or friendly conversations with another individual	5.33 .82 6	5.25 1.50 4	5.50 .80 12	5.50 2.12 2	2.00 0 1	5.00 0 1
19. Initiate, maintain, and draw others into task focused or friendly group conversations	5.33 .82 6	5.25 1.71 4	4.58 1.31 12	4.00 0 2	2.00 0 1	5.00 0 1
20. Join in task focused or friendly group conversations	5.50 .84 6	5.25 1.50 4	5.08 .90 12	5.50 2.12 2	3.00 0 1	5.00 0 1
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	6.00 .89 6	4.75 1.26 4	4.17 1.03 12	4.00 0 2	3.00 0 1	4.00 0 1
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.33 .52 6	5.00 2.71 4	5.36 .81 11	6.00 1.41 2	5.00 0 1	6.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
INTERPERSONAL RELATIONS SKILLS (continued)	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
15. Speak with others in a relaxed and self-confident manner	$\bar{x}$=6.00 sd=0 n=1	5.33 2.89 3	6.25 .96 4	5.28 1.22 300		5.62 1.25 594
16. Compliment and provide constructive feedback to others at appropriate times	5.00 0 1	5.33 2.89 3	6.50 .58 4	5.11 1.40 300		5.40 1.34 594
Conversations 17. Be able to handle criticism, disagreement, or disappointment during a conversation	6.00 0 1	6.00 1.73 3	6.75 .50 4	5.86 1.06 301		6.12 1.05 596
18. Initiate and maintain task focused or friendly conversations with another individual	5.00 0 1	5.33 2.89 3	6.00 .82 4	5.06 1.36 300		5.46 1.36 595
19. Initiate, maintain, and draw others into task focused or friendly group conversations	5.00 0 1	5.33 2.89 3	6.25 .50 4	4.72 1.47 300		5.09 1.45 595
20. Join in task focused or friendly group conversations	5.00 0 1	5.00 3.46 3	6.00 .82 4	4.84 1.40 300		5.20 1.39 595
REASONING SKILLS						
Verbal Reasoning 1. Generate or conceive of new or innovative ideas	6.00 0 1	4.33 2.89 3	6.25 .96 4	5.27 1.31 302		5.22 1.27 593
2. Try out or consciously attempt to use previously learned knowledge and skills in a new situation	6.00 0 1	5.00 1.73 3	6.00 .82 4	6.09 .96 301		6.12 .94 594

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
3. Understand and explain the main idea in another's written or oral communication	$\bar{x}$=5.87 sd= .74 n=15	5.40 1.06 15	5.50 .84 6	3.00 0 1	7.00 0 1	5.58 1.00 38
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.73 .96 15	5.40 .99 15	4.60 .55 5	5.00 0 1	5.00 0 1	5.41 .96 37
5. Organize ideas and put them into words rapidly in oral and written conversations	4.87 1.13 15	4.87 1.25 15	4.00 .71 5	2.00 0 1	7.00 0 1	4.73 1.26 37
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	4.87 1.73 15	4.67 .72 15	4.67 .52 6	4.00 0 1	6.00 0 1	4.76 1.20 38
7. State one's point of view, opinion, or position in written or oral communication	4.67 1.40 15	4.53 1.25 15	4.67 .82 6	3.00 0 1	7.00 0 1	4.63 1.28 38
8. Defend one's point of view, opinion, or position in written or oral communication	4.87 .99 15	4.93 1.16 15	5.00 .89 6	4.00 0 1	7.00 0 1	4.95 1.06 38
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	5.60 .91 15	4.81 .98 16	4.83 .75 6	4.50 2.12 2	6.00 0 1	5.13 1.02 40
10. Identify the conclusions in other's written or oral communication	5.27 1.10 15	4.88 1.15 16	5.17 .98 6	4.50 2.12 2	5.00 0 1	5.05 1.11 40
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.93 1.16 15	4.63 1.20 16	4.67 1.03 6	4.50 2.12 2	5.00 0 1	4.75 1.15 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
3. Understand and explain the main idea in another's written or oral communication	x̄=6.00 sd=1.41 n=2	6.00 1.16 4	7.00 0 1	5.74 .73 19	6.00 1.16 7	5.82 1.28 28
4. Recall ideas, facts, theories, principles, and other information accurately from memory	6.50 .71 2	6.25 .50 4	7.00 0 1	5.39 1.09 18	6.29 1.25 7	6.11 1.07 28
5. Organize ideas and put them into words rapidly in oral and written conversations	5.50 2.12 2	5.75 1.26 4	7.00 0 1	4.83 1.20 18	5.29 1.11 7	4.93 1.25 28
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	6.00 1.41 2	6.25 .96 4	7.00 0 1	5.47 1.02 19	5.00 1.00 7	4.50 1.48 28
7. State one's point of view, opinion, or position in written or oral communication	6.00 1.41 2	6.00 .82 4	7.00 0 1	5.58 1.07 19	4.86 1.07 7	4.68 1.25 28
8. Defend one's point of view, opinion, or position in written or oral communication	6.00 1.41 2	5.50 1.00 4	7.00 0 1	5.58 1.07 19	4.86 1.07 7	4.64 1.45 28
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	6.00 1.41 2	5.75 .96 4	7.00 0 1	5.11 .99 19	5.71 .95 7	4.79 1.55 28
10. Identify the conclusions in other's written or oral communication	6.00 1.41 2	5.75 .96 4	7.00 0 1	5.16 .60 19	5.71 .95 7	4.89 1.47 28
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.50 2.12 2	5.50 1.29 4	7.00 0 1	5.00 1.16 19	5.43 1.51 7	4.71 1.58 28

	REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
		Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
3.	Understand and explain the main idea in another's written or oral communication	$\bar{x}$=5.43 sd=1.81 n=7	4.00 0 1	7.00 0 1	6.00 0 1	5.85 1.38 26	5.57 1.16 14
4.	Recall ideas, facts, theories, principles, and other information accurately from memory	6.14 1.46 7	7.00 0 1	7.00 0 1	5.00 0 1	5.46 1.56 26	5.00 1.29 13
5.	Organize ideas and put them into words rapidly in oral and written conversations	5.14 2.12 7	5.00 0 1	6.00 0 1	5.00 0 1	5.58 1.30 26	5.39 1.33 13
6.	Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	3.71 2.36 7	5.00 0 1	6.00 0 1	4.00 0 1	5.15 1.12 26	4.93 1.00 14
7.	State one's point of view, opinion, or position in written or oral communication	4.29 2.14 7	6.00 0 1	6.00 0 1	7.00 0 1	5.58 1.58 26	5.43 1.16 14
8.	Defend one's point of view, opinion, or position in written or oral communication	4.14 2.27 7	6.00 0 1	5.00 0 1	6.00 0 1	5.35 1.62 26	5.29 1.33 14
9.	Distinguish between fact and opinion in one's own and in other's written and oral communication	4.57 1.90 7	4.00 0 1	5.00 0 1	5.00 0 1	5.46 1.42 26	5.21 1.19 14
10.	Identify the conclusions in other's written or oral communication	5.57 1.13 7	4.00 0 1	5.00 0 1	6.00 0 1	5.39 1.27 26	4.93 1.00 14
11.	Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.00 1.63 7	3.00 0 1	5.00 0 1	5.00 0 1	5.15 1.35 26	4.57 1.09 14

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
3. Understand and explain the main idea in another's written or oral communication	x̄=5.67 sd=1.53 n=3	5.67 1.16 3	5.00 0 1	6.20 1.30 5	5.50 2.00 8	5.77 1.26 131
4. Recall ideas, facts, theories, principles, and other information accurately from memory	4.67 1.53 3	5.33 1.53 3	7.00 0 1	6.20 1.30 5	5.13 1.89 8	5.70 1.34 129
5. Organize ideas and put them into words rapidly in oral and written conversations	5.00 2.00 3	5.33 1.53 3	5.00 0 1	5.60 1.14 5	5.25 1.83 8	5.24 1.34 129
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	4.33 2.08 3	4.67 1.16 3	5.00 0 1	5.60 1.14 5	5.13 1.13 8	4.99 1.34 131
7. State one's point of view, opinion, or position in written or oral communication	5.33 2.08 3	5.33 1.53 3	5.00 0 1	6.00 .71 5	4.88 1.81 8	5.27 1.40 131
8. Defend one's point of view, opinion, or position in written or oral communication	5.00 2.00 3	5.33 1.53 3	5.00 0 1	5.80 .84 5	4.38 1.60 8	5.12 1.46 131
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.67 1.53 3	5.00 1.00 3	5.00 0 1	5.20 1.10 5	4.75 1.39 8	5.13 1.33 131
10. Identify the conclusions in other's written or oral communication	4.00 1.73 3	5.67 .58 3	5.00 0 1	5.20 1.10 5	4.75 1.39 8	5.18 1.19 131
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.00 2.65 3	5.00 1.00 3	5.00 0 1	5.00 1.58 5	4.63 1.51 8	4.92 1.40 131

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
3. Understand and explain the main idea in another's written or oral communication	$\bar{x}$=7.00 sd=0 n=3	6.42 .79 12	5.78 1.06 18	6.00 1.00 3	6.00 1.73 3	6.67 .58 3
4. Recall ideas, facts, theories, principles, and other information accurately from memory	6.67 .58 3	6.50 .67 12	6.50 .71 18	6.33 1.16 3	6.67 .58 3	7.00 0 3
5. Organize ideas and put them into words rapidly in oral and written conversations	6.67 .58 3	6.25 .97 12	5.11 1.32 18	5.00 1.73 3	5.67 2.31 3	6.33 1.16 3
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	6.67 .58 3	6.08 1.00 12	5.12 1.54 17	5.00 1.73 3	4.00 1.00 3	6.33 .58 3
7. State one's point of view, opinion, or position in written or oral communication	6.00 1.00 3	5.50 1.38 12	4.94 1.39 17	5.00 1.73 3	5.67 1.16 3	6.00 1.00 3
8. Defend one's point of view, opinion, or position in written or oral communication	5.67 1.16 3	5.17 1.27 12	4.94 1.71 17	5.00 1.73 3	6.00 1.00 3	6.00 1.00 3
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	6.00 1.00 3	6.25 .97 12	5.33 1.50 18	6.00 1.00 3	6.67 .58 3	6.33 1.16 3
10. Identify the conclusions in other's written or oral communication	5.67 1.16 3	5.92 1.08 12	5.11 1.32 18	5.33 .58 3	5.33 1.53 3	6.67 .58 3
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.67 1.16 3	5.25 1.42 12	4.72 1.57 18	5.00 1.00 3	5.33 1.53 3	5.67 1.53 3

	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
REASONING SKILLS (continued)	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
3. Understand and explain the main idea in another's written or oral communication	x̄=6.00 sd=0 n=1	6.00 1.07 8	7.00 0 1	5.80 .45 5	6.11 .96 57
4. Recall ideas, facts, theories, principles, and other information accurately from memory	6.00 0 1	6.29 1.25 7	5.00 0 1	6.40 .55 5	6.46 .76 56
5. Organize ideas and put them into words rapidly in oral and written conversations	4.00 0 1	5.71 1.60 7	7.00 0 1	5.40 .89 5	5.64 1.34 56
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	3.00 0 1	5.25 1.04 8	6.00 0 1	5.20 .84 5	5.41 1.32 56
7. State one's point of view, opinion, or position in written or oral communication	3.00 0 1	5.88 .95 8	7.00 0 1	5.40 .89 5	5.39 1.29 56
8. Defend one's point of view, opinion, or position in written or oral communication	3.00 0 1	5.75 1.17 8	7.00 0 1	5.40 .89 5	5.30 1.39 56
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.00 0 1	5.63 1.19 8	6.00 0 1	5.40 .89 5	5.75 1.21 57
10. Identify the conclusions in other's written or oral communication	4.00 0 1	5.63 1.06 8	5.00 0 1	5.60 .55 5	5.51 1.14 57
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.00 0 1	5.63 1.19 8	5.00 0 1	4.20 1.30 5	5.05 1.38 57

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
REASONING SKILLS (continued)	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
3. Understand and explain the main idea in another's written or oral communication	$\bar{x}$=5.82 sd=1.14 n=22	5.25 .50 4	5.45 1.47 20	5.38 1.06 8	5.00 0 2	6.00 .93 8
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.32 1.13 22	6.75 .50 4	5.80 1.28 20	4.71 1.38 7	7.00 0 2	5.63 .92 8
5. Organize ideas and put them into words rapidly in oral and written conversations	5.18 1.18 22	5.00 .82 4	4.95 1.64 20	3.86 .38 7	5.00 1.41 2	5.50 1.31 8
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	5.46 1.50 22	5.50 1.00 4	5.00 1.34 20	4.50 .54 8	6.00 1.41 2	5.75 1.58 8
7. State one's point of view, opinion, or position in written or oral communication	5.55 1.06 22	4.75 .50 4	4.80 1.71 20	4.63 .74 8	4.50 .71 2	6.25 1.17 8
8. Defend one's point of view, opinion, or position in written or oral communication	5.27 1.28 22	4.50 .58 4	4.90 1.68 20	4.75 .89 8	4.50 .71 2	5.88 1.13 8
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	5.64 .90 22	4.50 .58 4	4.80 1.71 20	4.50 .54 8	4.50 .71 2	5.88 .99 8
10. Identify the conclusions in other's written or oral communication	5.14 1.17 22	4.25 1.26 4	4.70 1.59 20	4.75 .71 8	5.00 1.41 2	5.63 .92 8
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.32 1.13 22	4.25 1.71 4	4.60 1.54 20	4.25 1.28 8	4.00 2.83 2	5.50 .76 8

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
REASONING SKILLS (continued)	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
3. Understand and explain the main ideas in another's written or oral communication	x̄=5.50 sd=2.12 n=2	5.61 1.19 66				
4. Recall ideas, facts, theories, principles, and other information accurately from memory	4.00 1.41 2	5.54 1.25 65				
5. Organize ideas and put them into words rapidly in oral and written conversations	5.00 2.83 2	4.99 1.35 65				
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	4.00 2.83 2	5.21 1.40 66				
7. State one's point of view, opinion, or position in written or oral communication	5.00 2.83 2	5.20 1.36 66				
8. Defend one's point of view, opinion, or position in written or oral communication	5.00 2.83 2	5.09 1.37 66				
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.50 2.12 2	5.14 1.28 66				
10. Identify the conclusions in other's written or oral communication	3.50 2.12 2	4.91 1.30 66				
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	3.00 2.83 2	4.82 1.44 66				

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
REASONING SKILLS (continued)	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
3. Understand and explain the main idea in another's written or oral communication	x=5.40 sd=1.82 n=5	5.00 1.83 4	3.00 0 1	5.50 1.00 4	5.45 1.00 20	5.42 1.12 41
4. Recall ideas, facts, theories, principles, and other information accurately from memory	6.60 .55 5	6.50 .58 4	3.00 0 1	6.00 1.41 4	6.30 .92 20	6.32 1.04 41
5. Organize ideas and put them into words rapidly in oral and written conversations	4.20 1.10 5	4.00 1.16 4	3.00 0 1	5.25 .50 4	4.80 1.47 20	4.81 1.57 41
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	3.80 1.30 5	3.50 1.29 4	3.00 0 1	5.00 1.41 4	4.60 1.19 20	4.71 1.29 41
7. State one's point of view, opinion, or position in written or oral communication	4.60 1.14 5	4.50 1.29 4	3.00 0 1	4.75 1.50 4	4.70 1.38 20	4.68 1.37 41
8. Defend one's point of view, opinion, or position in written or oral communication	4.80 1.10 5	4.75 1.26 4	3.00 0 1	5.25 .96 4	4.85 1.18 20	4.81 1.45 41
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.80 1.10 5	4.75 1.26 4	3.00 0 1	4.75 1.26 4	5.15 1.14 20	4.85 1.51 41
10. Identify the conclusions in other's written or oral communication	4.60 1.67 5	4.50 1.92 4	3.00 0 1	5.50 .58 4	5.05 1.15 20	4.71 1.50 41
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.20 1.30 5	4.00 1.41 4	3.00 0 1	5.00 .82 4	4.75 1.16 20	4.68 1.51 41

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
3. Understand and explain the main idea in another's written or oral communication	x=4.00 sd=1.41 n=2	6.29 .95 7	5.44 .79 23	5.67 .82 6	6.50 .71 2	5.80 1.10 5
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.50 .71 2	6.14 1.07 7	5.91 .73 23	5.67 1.21 6	6.50 .71 2	5.80 .45 5
5. Organize ideas and put them into words rapidly in oral and written conversations	4.00 0 2	5.29 1.38 7	4.83 1.23 23	4.67 1.21 6	5.50 2.12 2	5.20 .84 5
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	3.50 .71 2	6.29 .95 7	4.96 1.11 23	4.83 1.47 6	3.50 .71 2	5.00 1.00 5
7. State one's point of view, opinion, or position in written or oral communication	3.50 .71 2	5.57 1.13 7	4.91 1.31 23	4.33 1.03 6	5.00 0 2	5.40 .89 5
8. Defend one's point of view, opinion, or position in written or oral communication	4.00 1.41 2	5.29 .95 7	4.91 1.27 22	4.50 1.05 6	5.00 0 2	5.80 .84 5
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	2.50 .71 2	5.43 1.13 7	4.58 1.28 24	3.83 1.17 6	5.00 0 2	5.20 1.10 5
10. Identify the conclusions in other's written or oral communication	3.50 .71 2	5.71 .95 7	4.67 1.09 24	4.50 1.05 6	4.00 1.41 2	5.50 1.00 4
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	3.50 2.12 2	5.57 .98 7	4.50 1.10 24	4.33 1.03 6	4.50 .71 2	5.20 .84 5

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
3. Understand and explain the main idea in another's written or oral communication	$\bar{x}$=5.42 sd=1.10 n=26	5.60 1.27 10	5.67 .58 3	5.80 1.04 25	5.50 .71 2	5.59 1.50 17
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.54 1.21 26	5.90 1.20 10	5.33 1.16 3	6.08 1.38 25	5.50 2.12 2	5.53 1.63 17
5. Organize ideas and put them into words rapidly in oral and written conversations	4.46 1.27 26	4.90 1.20 10	5.00 1.00 3	5.12 1.39 25	4.00 0 2	4.47 1.74 17
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	4.15 1.78 26	3.80 1.32 10	4.33 .58 3	4.36 1.47 25	4.00 0 2	3.71 1.40 17
7. State one's point of view, opinion, or position in written or oral communication	4.31 1.87 26	4.60 1.58 10	5.00 1.00 3	4.80 1.47 25	5.00 1.41 2	3.65 1.58 17
8. Defend one's point of view, opinion, or position in written or oral communication	4.54 1.39 26	4.60 1.17 10	5.00 1.00 3	4.88 1.42 25	4.50 2.12 2	3.65 1.58 17
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.19 1.52 26	4.20 1.32 10	4.33 1.53 3	4.76 1.48 25	5.00 1.41 2	3.88 1.76 17
10. Identify the conclusions in other's written or oral communication	4.12 1.68 26	4.70 1.42 10	4.00 0 3	5.16 1.46 25	5.50 2.12 2	3.94 1.71 17
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.35 1.52 26	4.40 1.35 10	4.00 0 3	4.84 1.49 25	5.50 2.12 2	3.41 1.77 17

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
3. Understand and explain the main idea in another's written or oral communication	x=5.13 sd=1.29 n-23	5.40 1.52 5	5.04 1.51 26	5.00 1.41 2	5.50 1.20 8	3.00 0 1
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.77 1.23 22	6.00 1.16 4	5.19 1.36 26	7.00 0 2	5.88 1.55 8	6.00 0 1
5. Organize ideas and put them into words rapidly in oral and written conversations	4.48 1.44 23	3.60 1.14 5	3.92 1.62 26	5.50 2.12 2	5.38 .92 8	3.00 0 1
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	4.22 1.28 23	3.60 1.14 5	4.15 1.69 26	5.00 1.41 2	5.38 .92 8	2.00 0 1
7. State one's point of view, opinion, or position in written or oral communication	4.48 1.59 23	3.80 1.64 5	4.46 1.75 26	5.50 2.12 2	5.38 1.06 8	3.00 0 1
8. Defend one's point of view, opinion, or position in written or oral communication	4.35 1.64 23	3.80 1.64 5	4.46 1.68 26	5.50 2.12 2	4.88 1.64 8	3.00 0 1
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	4.39 1.31 23	3.80 1.30 5	4.69 1.62 26	5.00 1.41 2	5.00 1.07 8	3.00 0 1
10. Identify the conclusions in other's written or oral communication	4.35 1.47 23	4.00 1.87 5	4.62 1.58 26	5.00 1.41 2	5.25 1.17 8	3.00 0 1
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	4.44 1.27 23	4.20 1.10 5	4.39 1.72 26	5.00 0 2	5.00 1.07 8	3.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
3. Understand and explain the main idea in another's written or oral communication	x=5.83 sd= .98 n=6	4.25 2.22 4	4.67 1.16 12	5.50 2.12 2	2.00 0 1	6.00 0 1
4. Recall ideas, facts, theories, principles, and other information accurately from memory	5.67 1.51 6	6.50 1.00 4	4.91 1.30 11	4.00 1.41 2	2.00 0 1	6.00 0 1
5. Organize ideas and put them into words rapidly in oral and written conversations	5.17 1.17 6	4.25 2.36 4	4.36 1.12 11	5.00 2.83 2	2.00 0 1	5.00 0 1
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	5.17 1.17 6	5.25 1.50 4	4.50 .67 12	4.00 2.83 2	2.00 0 1	5.00 0 1
7. State one's point of view, opinion, or position in written or oral communication	5.50 1.05 6	4.75 1.71 4	4.33 .99 12	5.00 2.83 2	3.00 0 1	5.00 0 1
8. Defend one's point of view, opinion, or position in written or oral communication	5.33 1.03 6	5.00 1.83 4	4.67 1.07 12	5.00 2.83 2	3.00 0 1	5.00 0 1
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	5.33 1.37 6	5.75 1.89 4	4.67 1.30 12	4.50 2.12 2	3.00 0 1	4.00 0 1
10. Identify the conclusions in other's written or oral communication	5.50 1.52 6	6.00 1.41 4	4.92 1.00 12	3.50 2.12 2	4.00 0 1	5.00 0 1
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.33 1.03 6	4.00 2.16 4	4.50 1.31 12	3.00 2.83 2	2.00 0 1	4.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREA AND PROGRAMS					
	VOCATIONAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
3. Understand and explain the main idea in another's written or oral communication	x=5.00 sd=0 n=1	5.67 .58 3	6.50 .58 4	5.39 1.23 302		5.58 1.21 594
4. Recall ideas, facts, theories, principles, and other information accurately from memory	6.00 0 1	5.67 .58 3	6.00 1.16 4	5.83 1.24 299		5.80 1.23 586
5. Organize ideas and put them into words rapidly in oral and written conversations	5.00 0 1	4.33 2.89 3	6.50 .58 4	4.67 1.44 301		4.92 1.43 588
6. Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values	6.00 0 1	4.33 2.89 3	6.25 .96 4	4.47 1.43 302		4.77 1.42 593
7. State one's point of view, opinion, or position in written or oral communication	5.00 0 1	4.33 2.89 3	6.25 .50 4	4.62 1.49 302		4.90 1.46 593
8. Defend one's point of view, opinion, or position in written or oral communication	5.00 0 1	4.33 2.89 3	6.00 .82 4	4.68 1.43 301		4.90 1.42 592
9. Distinguish between fact and opinion in one's own and in other's written and oral communication	5.00 0 1	3.00 1.73 3	6.75 .50 4	4.62 1.45 303		4.93 1.40 597
10. Identify the conclusions in other's written or oral communication	5.00 0 1	3.00 1.73 3	6.00 .82 4	4.68 1.46 302		4.92 1.36 596
11. Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion	5.00 0 1	3.00 1.73 3	5.75 .96 4	4.50 1.43 303		4.70 1.42 597

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
REASONING SKILLS (continued)	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
12. Compile one's own notes taken on several written sources into a single report	x̄=4.20 sd=1.15 n=15	4.75 1.34 16	3.50 1.23 6	5.00 2.83 2	5.00 0 1	4.38 1.33 40
13. Compile ideas, notes, and materials supplied by others into a single report	4.20 1.01 15	4.50 1.10 16	3.50 1.23 6	5.00 2.83 2	6.00 0 1	4.30 1.20 40
14. Carry out correctly written or oral instructions given by another	6.33 .90 15	6.38 .62 16	6.83 .41 6	6.50 .71 2	7.00 0 1	6.45 .71 40
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.53 .99 15	5.19 1.11 16	4.83 .98 6	5.00 2.83 2	5.00 0 1	5.25 1.10 40
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.33 .82 15	5.00 1.27 16	4.67 .82 6	5.50 2.12 2	5.00 0 1	5.10 1.06 40
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	6.00 1.20 15	5.81 .83 16	5.33 .52 6	6.50 .71 2	5.00 0 1	5.83 .96 40
18. Ask appropriate questions to identify or verify the existence of a problem	5.93 1.22 15	5.44 1.15 16	5.17 1.47 6	5.00 0 2	5.00 0 1	5.55 1.20 40
19. Enumerate the possible causes of a problem	5.93 1.16 15	5.56 1.03 16	5.33 1.21 6	6.00 1.41 2	5.00 0 1	5.68 1.10 40
20. Use efficient methods for eliminating the causes of a problem	6.00 1.07 15	5.75 1.00 16	5.33 1.03 6	6.50 .71 2	7.00 0 1	5.85 1.03 40

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
12. Compile one's own notes taken on several written sources into a single report	$\bar{x}$=5.50 sd= .71 n=2	5.00 .82 4	6.00 0 1	4.21 1.27 19	5.43 1.81 7	4.75 1.78 28
13. Compile ideas, notes, and materials supplied by others into a single report	5.50 .71 2	5.00 .82 4	6.00 0 1	4.16 1.17 19	5.71 1.80 7	4.64 1.75 28
14. Carry out correctly written or oral instructions given by another	7.00 0 2	6.75 .50 4	7.00 0 1	6.68 .48 19	6.86 .38 7	6.21 1.48 28
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	7.00 0 1	6.00 1.00 3	7.00 0 1	4.90 1.20 19	5.57 1.13 7	5.14 1.65 28
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	7.00 0 1	6.33 .58 3	7.00 0 1	4.84 1.39 19	5.14 1.35 7	4.82 1.62 27
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	7.00 0 1	6.33 1.16 3	7.00 0 1	5.63 .76 19	6.43 .54 7	5.93 1.18 28
18. Ask appropriate questions to identify or verify the existence of a problem	7.00 0 1	6.33 1.16 3	7.00 0 1	5.53 1.17 19	6.71 .49 7	5.82 1.39 28
19. Enumerate the possible causes of a problem	7.00 0 1	6.67 .58 3	7.00 0 1	5.47 .96 19	6.00 1.16 7	5.96 1.07 28
20. Use efficient methods for eliminating the causes of a problem	7.00 0 1	6.67 .58 3	7.00 0 1	5.53 .70 19	6.43 .79 7	5.96 1.14 28

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
12. Compile one's own notes taken on several written sources into a single report	x=4.86 sd=1.95 n=7	6.00 0 1	6.00 0 1	6.00 0 1	5.54 1.33 26	4.79 1.31 14
13. Compile ideas, notes, and materials supplied by others into a single report	4.71 2.50 7	7.00 0 1	6.00 0 1	6.00 0 1	5.50 1.33 26	4.71 1.33 14
14. Carry out correctly written or oral instructions given by another	5.86 1.87 7	7.00 0 1	7.00 0 1	7.00 0 1	6.62 .50 26	6.53 .92 15
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.14 2.19 7	7.00 0 1	5.00 0 1	5.00 0 1	5.31 1.26 26	4.40 1.35 15
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.00 2.31 7	5.00 0 1	5.00 0 1	5.00 0 1	5.08 1.41 25	4.33 1.72 15
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	4.57 2.23 7	3.00 0 1	6.00 0 1	5.00 0 1	5.39 1.06 26	5.29 .91 14
18. Ask appropriate questions to identify or verify the existence of a problem	5.14 1.57 7	3.00 0 1	6.00 0 1	5.00 0 1	5.69 1.09 26	5.33 1.11 15
19. Enumerate the possible causes of a problem	5.57 1.40 7	3.00 0 1	5.00 0 1	6.00 0 1	5.31 1.29 26	4.93 .96 15
20. Use efficient methods for eliminating the causes of a problem	5.57 1.51 7	6.00 0 1	5.00 0 1	6.00 0 1	5.58 1.07 26	5.07 .70 15

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
12. Compile one's own notes taken on several written sources into a single report	$\bar{x}$=3.67 sd=2.31 n=3	6.00 0 3	5.00 0 1	5.80 1.10 5	4.25 1.39 8	4.95 1.52 131
13. Compile ideas, notes, and materials supplied by others into a single report	4.00 2.65 3	5.67 .58 3	5.00 0 1	6.00 1.23 5	4.38 1.41 8	4.93 1.56 131
14. Carry out correctly written or oral instructions given by another	7.00 0 3	6.33 .58 3	7.00 0 1	7.00 0 5	6.88 .35 8	6.56 .94 132
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.33 1.53 3	5.33 1.53 3	5.00 0 1	5.60 2.19 5	4.75 1.28 8	5.09 1.46 130
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.00 2.00 3	5.33 1.53 3	5.00 0 1	5.20 2.05 5	4.29 .95 7	4.87 1.55 127
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	4.67 1.53 3	5.33 1.53 3	6.00 0 1	5.20 1.64 5	5.00 .93 8	5.53 1.20 129
18. Ask appropriate questions to identify or verify the existence of a problem	5.33 1.53 3	6.00 1.00 3	7.00 0 1	5.40 1.82 5	5.00 1.07 8	5.65 1.25 130
19. Enumerate the possible causes of a problem	5.00 1.00 3	5.33 1.53 3	7.00 0 1	5.00 1.58 5	5.00 1.20 8	5.50 1.20 130
20. Use efficient methods for eliminating the causes of a problem	5.67 1.53 3	6.00 1.00 3	7.00 0 1	5.60 1.14 5	5.25 1.17 8	5.69 1.05 130

REASONING SKILLS (continued)	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
12. Compile one's own notes taken on several written sources into a single report	x=6.00 sd=1.00 n=3	5.17 1.40 12	4.44 2.04 18	4.67 2.08 3	5.67 2.31 3	6.00 1.73 3
13. Compile ideas, notes, and materials supplied by others into a single report	5.33 .58 3	5.25 1.55 12	4.56 2.20 18	4.67 2.08 3	5.00 2.00 3	6.00 1.73 3
14. Carry out correctly written or oral instructions given by another	7.00 0 3	6.83 .39 12	6.67 .77 18	7.00 0 1	7.00 0 3	7.00 0 3
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	7.00 0 3	5.42 1.24 [illegible]	4.67 1.82 18	6.00 1.00 3	4.00 2.65 3	6.00 1.73 3
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	7.00 0 3	[illegible]08 1.44 12	4.22 1.93 18	5.67 1.53 3	4.00 2.65 3	5.00 1.73 3
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	6.33 .58 3	6.25 1.06 12	5.72 1.32 18	5.00 1.00 3	6.67 .58 3	6.67 .58 3
18. Ask appropriate questions to identify or verify the existence of a problem	6.33 .58 3	6.17 .94 12	5.72 1.23 18	5.67 .58 3	6.67 .58 3	6.33 .58 3
19. Enumerate the possible causes of a problem	6.33 .58 3	6.08 1.17 12	5.56 1.42 18	5.00 1.00 3	6.67 .58 3	6.33 1.16 3
20. Use efficient methods for eliminating the causes of a problem	6.67 .58 3	6.17 1.03 12	5.72 1.32 18	5.33 .58 3	6.67 .58 3	6.67 .58 3

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
12. Compile one's own notes taken on several written sources into a single report	$\bar{x}$=6.00 sd=0 n=1	5.25 1.67 8	5.00 0 1	4.80 1.30 5	5.02 1.70 57
13. Compile ideas, notes, and materials supplied by others into a single report	4.00 0 1	5.13 1.64 8	6.00 0 1	5.00 1.58 5	4.98 1.75 57
14. Carry out correctly written or oral instructions given by another	7.00 0 1	6.75 .46 8	7.00 0 1	6.60 .55 5	6.78 .53 55
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	3.00 0 1	4.50 1.41 8	5.00 0 1	5.00 1.41 5	5.04 1.63 57
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	3.00 0 1	4.38 2.00 8	5.00 0 1	5.00 1.41 5	4.74 1.78 57
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	5.00 0 1	6.00 .76 8	5.00 0 1	5.60 .55 5	5.93 1.05 57
18. Ask appropriate questions to identify or verify the existence of a problem	5.00 0 1	5.88 1.25 8	5.00 0 1	5.40 .55 5	5.90 1.01 57
19. Enumerate the possible causes of a problem	5.00 0 1	6.00 1.07 8	5.00 0 1	4.80 1.10 5	5.75 1.21 57
20. Use efficient methods for eliminating the causes of a problem	5.00 0 1	6.00 .93 8	7.00 0 1	4.80 1.10 5	5.91 1.12 57

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		HOME ECONOMICS OCCUPATIONS				
REASONING SKILLS (continued)	Child Care	Clothing Management, Production, and Service	Food Management, Productionl and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
12. Compile one's own notes taken on several written sources into a single report	x̄=5.00 sd=1.18 n=21	4.75 .50 4	4.20 1.47 20	4.00 .93 8	5.00 0 2	5.75 1.17 8
13. Compile ideas, notes, and materials supplied by others into a single report	4.50 1.26 22	4.00 1.41 4	4.15 1.42 20	3.50 1.07 8	3.50 2.12 2	5.63 .92 8
14. Carry out correctly written or oral instructions given by another	6.68 .72 22	6.50 .58 4	6.55 .83 20	6.50 1.07 8	7.00 0 2	6.75 .71 8
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	6.27 .83 22	5.25 .96 4	6.10 1.12 20	5.13 1.36 8	5.00 1.41 2	6.50 .54 8
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.86 1.08 22	5.00 .82 4	5.68 1.60 19	5.13 .99 8	5.00 1.41 2	6.25 .89 8
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	5.86 1.13 22	5.00 1.16 4	5.65 1.18 20	5.50 .76 8	5.00 1.41 2	6.13 .84 8
18. Ask appropriate questions to identify or verify the existence of a problem	6.23 .75 22	4.75 .96 4	5.60 1.47 20	5.00 1.07 8	4.50 .71 2	6.13 .84 8
19. Enumerate the possible causes of a problem	6.14 .71 22	5.25 .96 4	5.75 1.12 20	5.25 .89 8	5.00 1.41 2	6.50 .54 8
20. Use efficient methods for eliminating the causes of a problem	6.46 .80 22	5.25 .96 4	5.75 1.29 20	5.75 1.04 8	4.50 .71 2	6.50 .76 8

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
12. Compile one's own notes taken on several written sources into a single report	x=3.00 sd=2.83 n=2	4.65 1.36 65				
13. Compile ideas, notes, and materials supplied by others into a single report	3.50 3.54 2	4.32 1.43 66				
14. Carry out correctly written or oral instructions given by another	7.00 0 2	6.64 .76 66				
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.50 .71 2	5.96 1.09 66				
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.00 1.41 2	5.63 1.27 65				
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	4.00 1.41 2	5.65 1.12 66				
18. Ask appropriate questions to identify or verify the existence of a problem	4.50 .71 2	5.68 1.18 66				
19. Enumerate the possible causes of a problem	4.50 .71 2	5.82 .98 66				
20. Use efficient methods for eliminating the causes of a problem	5.50 2.12 2	6.00 1.11 66				

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS INDUSTRIAL OCCUPATIONS Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
12. Compile one's own notes taken on several written sources into a single report	x̄=4.20 sd=1.92 n=5	4.00 2.16 4	3.00 0 1	4.25 .96 4	4.10 1.52 20	4.07 1.68 41
13. Compile ideas, notes, and materials supplied by others into a single report	4.40 2.19 5	4.25 2.50 4	3.00 0 1	5.00 0 4	3.95 1.61 20	3.93 1.65 41
14. Carry out correctly written or oral instructions given by another	6.60 .55 5	6.50 .58 4	3.00 0 1	6.00 .82 4	6.05 1.23 20	6.39 .97 41
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.20 1.64 5	4.75 1.50 4	3.00 0 1	5.00 2.00 4	5.60 1.27 20	4.83 1.50 41
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.20 2.17 5	4.75 2.22 4	3.00 0 1	5.00 2.00 4	5.50 1.32 20	4.83 1.53 41
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	5.80 1.30 5	5.50 1.29 4	3.00 0 1	6.25 .50 4	5.65 1.14 20	5.81 1.10 41
18. Ask appropriate questions to identify or verify the existence of a problem	6.00 1.00 5	5.75 .96 4	5.00 0 1	6.25 .96 4	6.20 .70 20	6.02 1.06 41
19. Enumerate the possible causes of a problem	6.20 .84 5	6.00 .82 4	5.00 0 1	6.25 .50 4	5.80 1.28 20	5.88 1.49 4[illegible]
20. Use efficient methods for eliminating the causes of a problem	6.40 .89 5	6.25 .96 4	5.00 0 1	6.50 .58 4	6.00 1.03 20	[illegible] .94 41

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
12. Compile one's own notes taken on several written sources into a single report	$\bar{x}$=4.50 sd=2.12 n=2	4.86 1.22 7	3.83 1.27 24	4.00 1.41 6	4.00 0 2	5.40 1.14 5
13. Compile ideas, notes, and materials supplied by others into a single report	4.00 2.83 2	4.86 .69 7	3.79 1.14 24	4.00 1.41 6	4.00 0 2	4.80 .84 5
14. Carry out correctly written or oral instructions given by another	6.50 .71 2	6.57 .54 7	6.21 .88 24	5.83 .75 6	5.00 1.41 2	6.00 1.23 5
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.00 2.83 2	5.86 1.22 7	5.04 1.37 24	5.17 1.47 6	4.00 1.41 2	6.00 .71 5
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.00 2.83 2	5.00 .58 7	4.75 1.36 24	4.83 1.94 6	3.00 2.83 2	5.80 .84 5
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	6.00 1.41 2	5.71 .95 7	5.00 1.47 24	4.83 1.94 6	6.50 .71 2	6.00 1.23 5
18. Ask appropriate questions to identify or verify the existence of a problem	6.00 1.41 2	5.43 .98 7	5.33 1.27 24	5.33 1.97 6	6.50 .71 2	6.40 .89 5
19. Enumerate the possible causes of a problem	6.00 1.41 2	6.00 ,82 7	5.00 1.32 24	5.33 1.63 6	6.50 .71 2	6.60 .89 5
20. Use efficient methods for eliminating the causes of a problem	6.00 1.41 2	6.00 .82 7	5.21 1.06 24	5.17 1.60 6	7.00 0 2	6.60 .89 5

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
12. Compile one's own notes taken on several written sources into a single report	$\bar{x}$=4.39 sd=1.60 n=26	4.60 1.43 10	5.00 1.00 3	5.28 1.37 25	5.50 .71 2	3.06 1.68 17
13. Compile ideas, notes, and materials supplied by others into a single report	4.39 1.60 26	4.60 1.65 10	5.00 1.00 3	5.00 1.56 25	5.50 .71 2	3.18 1.78 17
14. Carry out correctly written or oral instructions given by another	6.35 1.02 26	6.00 1.33 10	5.33 1.16 3	6.12 .97 25	6.50 .71 2	6.18 1.02 17
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.15 1.41 26	4.70 1.34 10	4.67 1.16 3	4.76 1.62 25	3.50 .71 2	4.35 1.94 17
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.77 1.53 26	4.20 1.55 10	4.33 .58 3	4.60 1.78 25	4.00 0 2	4.47 1.94 17
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	5.39 1.36 26	5.30 1.34 10	4.33 .58 3	6.00 1.32 25	5.50 2.12 2	4.88 1.36 17
18. Ask appropriate questions to identify or verify the existence of a problem	5.46 1.21 26	5.60 1.17 10	4.67 .58 3	6.08 1.08 25	5.50 .71 2	4.94 1.68 17
19. Enumerate the possible causes of a problem	5.31 1.09 26	5.60 1.58 10	4.67 .58 3	6.16 1.25 25	6.00 1.41 2	5.41 1.23 17
20. Use efficient methods for eliminating the causes of a problem	5.46 1.14 26	6.10 1.20 10	5.00 1.00 3	6.44 .92 25	6.00 1.41 2	5.41 1.33 17

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
12. Compile one's own notes taken on several written sources into a single report	x̄=4.30 sd=1.72 n=23	3.60 1.52 5	4.12 1.56 26	5.50 2.12 2	3.75 1.04 8	1.00 0 1
13. Compile ideas, notes, and materials supplied by others into a single report	4.00 1.65 23	3.60 1.52 5	3.81 1.63 26	5.50 2.12 2	3.75 1.17 8	1.00 0 1
14. Carry out correctly written or oral instructions given by another	6.30 .93 23	6.20 .84 5	5.89 .95 26	7.00 0 2	6.50 .76 8	6.00 0 1
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.09 1.54 23	5.20 1.10 5	5.35 1.38 26	5.00 1.41 2	4.75 1.91 8	3.00 0 1
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	4.78 1.48 23	5.20 1.10 5	5.12 1.42 26	4.50 .71 2	4.75 1.75 8	2.00 0 1
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	5.61 1.27 23	5.20 1.64 5	5.27 1.28 26	6.00 0 2	5.63 1.19 8	5.00 0 1
18. Ask appropriate questions to identify or verify the existence of a problem	5.46 1.34 22	5.20 1.30 5	5.44 1.42 25	6.00 1.41 2	5.88 1.36 8	5.00 0 1
19. Enumerate the possible causes of a problem	5.39 1.27 23	5.20 1.48 5	5.39 1.44 26	5.50 .71 2	5.88 1.25 8	6.00 0 1
20. Use efficient methods for eliminating the causes of a problem	5.65 1.30 23	5.60 1.14 5	5.58 1.36 26	6.50 .71 2	6.13 1.13 8	6.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
		INDUSTRIAL OCCUPATIONS				
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
12. Compile one's own notes taken on several written sources into a single report	x̄=4.83 sd=1.17 n=6	4.50 2.65 4	3.50 1.68 12	3.00 2.83 2	2.00 0 1	5.00 0 1
13. Compile ideas, notes, and materials supplied by others into a single report	5.17 1.17 6	4.50 2.65 4	3.42 1.68 12	3.50 3.54 2	2.00 0 1	6.00 0 1
14. Carry out correctly written or oral instructions given by another	6.00 .89 6	6.50 .58 4	6.58 .67 12	7.00 0 2	6.00 0 1	5.00 0 1
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.67 .52 6	5.25 2.06 4	4.17 1.40 12	4.50 .71 2	3.00 0 1	5.00 0 1
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	5.83 .41 6	4.25 2.75 4	4.33 1.37 12	4.00 1.41 2	2.00 0 1	5.00 0 1
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	6.17 .41 6	6.50 1.00 4	5.17 1.40 12	4.00 1.41 2	2.00 0 1	6.00 0 1
18. Ask appropriate questions to identify or verify the existence of a problem	6.17 .75 6	5.25 1.50 4	5.00 1.48 12	4.50 .71 2	2.00 0 1	6.00 0 1
19. Enumerate the possible causes of a problem	6.17 .41 6	6.75 .50 4	4.92 1.44 12	4.50 .71 2	4.00 0 1	6.00 0 1
20. Use efficient methods for eliminating the causes of a problem	6.17 .75 6	6.25 .96 4	5.25 .62 12	5.50 2.12 2	3.00 0 1	6.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
12. Compile one's own notes taken on several written sources into a single report	x=5.00 sd=0 n=1	3.00 1.73 3	6.75 .50 4	4.22 1.62 303		4.51 1.59 596
13. Compile ideas, notes, and materials supplied by others into a single report	5.00 0 1	3.00 1.73 3	6.75 .50 4	4.14 1.64 303		4.42 1.62 597
14. Carry out correctly written or oral instructions given by another	6.00 0 1	4.33 .58 3	6.75 .50 4	6.20 .98 303		6.40 .92 596
15. Observe another's performance of a task to identify whether the performance is satisfactory or needs to be improved	6.00 0 1	3.67 .58 3	5.75 1.89 4	4.98 1.49 303		5.13 1.46 596
16. Ask questions about another's performance of a task to identify whether the performance is satisfactory or needs to be improved	6.00 0 1	3.67 .58 3	6.75 .50 4	4.81 1.56 303		4.92 1.54 592
Problem Solving 17. Recognize or identify the existence of a problem given a specific set of facts	6.00 0 1	4.00 0 3	6.50 .58 4	5.49 1.31 303		5.58 1.23 595
18. Ask appropriate questions to identify or verify the existence of a problem	6.00 0 1	3.67 .58 3	7.00 0 4	5.63 1.27 301		5.66 1.23 594
19. Enumerate the possible causes of a problem	6.00 0 1	4.33 .58 3	6.75 .50 4	5.62 1.30 303		5.63 1.22 596
20. Use efficient methods for eliminating the causes of a problem	6.00 0 1	4.33 .58 3	6.75 .50 4	5.84 1.15 303		5.83 1.12 596

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS AGRICULTURAL OCCUPATIONS Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
21. Judge the credibility of a source of information	$\bar{x}$=5.87 sd=1.19 n=15	5.19 1.11 16	5.00 1.41 6	6.50 .71 2	6.00 0 1	5.[illegible]0 1.20 40
22. Identify important information needed to solve a problem	5.93 1.03 15	5.69 .79 16	5.50 [illegible]4 6	6.50 .71 2	6.00 0 1	5.80 .88 40
23. Identify other's and one's own assumptions relating to a problem	5.87 1.13 15	4.94 1.24 16	4.83 1.17 6	6.00 0 2	6.00 0 1	5.35 1.21 40
24. Generate or conceive of possible alternative solutions to a problem	6.00 1.07 15	5.69 .79 16	5.67 .82 6	6.00 0 2	6.00 0 1	5.83 .87 40
25. Describe the application and likely consequences of possible alternative problem solutions	5.67 1.05 15	5.50 .82 16	5.50 .84 6	5.50 .71 2	7.00 0 1	5.60 .90 40
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.00 1.00 15	5.44 .81 16	5.50 1.05 6	5.50 .71 2	7.00 0 1	5.70 .94 40
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.33 1.59 15	5.63 1.36 16	4.17 1.47 6	6.50 .71 2	7.00 0 1	5.38 1.51 40
28. Estimate weight of various objects of different shapes, sizes, and makeup	4.73 1.71 15	4.81 1.38 16	4.17 1.47 6	3.00 0 2	4.00 0 1	4.58 1.50 40
29. Estimate length, width, height, and distance between objects	5.20 1.78 15	5.31 1.30 16	4.33 1.37 6	5.50 2.12 2	6.00 0 1	5.15 1.51 40

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
21. Judge the credibility of a source of information	x=5.50 sd= .71 n=2	5.75 .96 4	6.00 0 1	5.37 .96 19	5.86 1.22 7	5.11 1.85 28
22. Identify important information needed to solve a problem	6.50 .71 2	6.50 .58 4	7.00 0 1	5.74 .73 19	6.43 .79 7	6.39 .79 28
23. Identify other's and one's own assumptions relating to a problem	5.50 .71 2	5.75 .96 4	6.00 0 1	4.95 1.03 19	5.86 1.46 7	5.14 1.78 28
24. Generate or conceive of possible alternative solutions to a problem	6.50 .71 2	6.25 .50 4	7.00 0 1	5.37 .96 19	6.14 .90 7	5.89 1.42 28
25. Describe the application and likely consequences of possible alternative problem solutions	6.00 1.41 2	6.00 .82 4	7.00 0 1	5.26 1.15 19	6.00 1.16 7	5.82 1.44 28
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.00 1.41 2	6.25 .96 4	7.00 0 1	5.21 1.18 19	6.29 1.25 7	6.04 1.35 28
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	7.00 0 2	5.75 1.89 4	7.00 0 1	4.53 1.68 19	3.00 2.58 7	3.68 2.16 28
28. Estimate weight of various objects of different shapes, sizes, and makeup	5.00 1.41 2	5.00 1.16 4	4.00 0 1	3.90 1.70 19	2.57 1.99 7	2.67 1.88 27
29. Estimate length, width, height, and distance between objects	5.00 1.41 2	4.50 1.29 4	4.00 0 1	4.00 1.37 17	2.57 1.99 7	2.68 1.85 28

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
21. Judge the credibility of a source of information	$\bar{x}$=5.00 sd=2.00 n=7	6.00 0 1	7.00 0 1	5.00 0 1	5.50 1.11 26	4.67 1.35 15
22. Identify important information needed to solve a problem	6.43 .79 7	5.00 0 1	7.00 0 1	5.00 0 1	5.73 .92 26	5.40 .99 15
23. Identify other's and one's own assumptions relating to a problem	4.86 1.46 7	4.00 0 1	5.00 0 1	4.00 0 1	4.89 1.28 26	4.53 1.25 15
24. Generate or conceive of possible alternative solutions to a problem	5.86 1.22 7	6.00 0 1	5.00 0 1	5.00 0 1	5.39 1.20 26	5.00 .76 15
25. Describe the application and likely consequences of possible alternative problem solutions	5.43 1.51 7	6.00 0 1	5.00 0 1	4.00 0 1	5.27 1.28 26	4.93 .88 15
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.00 1.29 7	6.00 0 1	6.00 0 1	4.00 0 1	5.04 1.34 26	4.73 1.03 15
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	4.86 1.95 7	5.00 0 1	5.00 0 1	4.00 0 1	3.92 1.98 26	3.67 1.68 15
28. Estimate weight of various objects of different shapes, sizes, and makeup	3.00 2.38 7	2.00 0 1	5.00 0 1	4.00 0 1	3.15 1.87 26	3.20 1.27 15
29. Estimate length, width, height, and distance between objects	3.00 2.38 7	4.00 0 1	5.00 0 1	3.00 0 1	2.92 1.77 26	3.33 1.40 15

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
21. Judge the credibility of a source of information	x=5.33 sd=1.16 n=3	5.33 1.53 3	6.00 0 1	6.20 .84 5	4.88 .64 8	5.30 1.34 132
22. Identify important information needed to solve a problem	5.00 1.73 3	5.67 1.16 3	7.00 0 1	6.20 .84 5	5.38 1.06 8	5.94 .95 132
23. Identify other's and one's own assumptions relating to a problem	4.67 1.53 3	5.00 1.00 3	5.00 0 1	5.20 1.30 5	4.75 1.04 8	4.99 1.33 132
24. Generate or conceive of possible alternative solutions to a problem	5.67 .58 3	5.33 .58 3	7.00 0 1	5.80 .84 5	5.38 1.19 8	5.60 1.13 132
25. Describe the application and likely consequences of possible alternative problem solutions	5.33 1.53 3	5.00 1.00 3	7.00 0 1	5.60 1.14 5	5.13 1.13 8	5.45 1.24 132
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.00 2.00 3	5.33 .58 3	7.00 0 1	5.80 1.10 5	5.13 1.13 8	5.49 1.31 132
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.00 1.73 3	3.67 1.53 3	4.00 0 1	4.40 1.95 5	3.13 2.03 8	4.06 1.98 132
28. Estimate weight of various objects of different shapes, sizes, and makeup	3.67 .58 3	3.00 1.00 3	2.00 0 1	4.00 2.12 5	2.50 1.51 8	3.22 1.77 131
29. Estimate length, width, height, and distance between objects	4.33 1.53 3	3.67 1.53 3	2.00 0 1	4.20 2.17 5	3.13 1.81 8	3.26 1.75 130

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS HEALTH OCCUPATIONS Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
21. Judge the credibility of a source of information	$\bar{x}$=6.00 sd=1.00 n=3	6.00 .95 12	5.17 1.58 18	5.67 .58 3	5.67 1.53 3	6.67 .58 3
22. Identify important information needed to solve a problem	7.00 0 3	6.17 1.12 12	5.72 1.23 18	5.00 1.00 3	6.33 .58 3	6.67 .58 3
23. Identify other's and one's own assumptions relating to a problem	5.67 .58 3	5.58 1.31 12	5.11 1.32 18	5.67 .58 3	4.67 2.52 3	6.67 .58 3
24. Generate or conceive of possible alternative solutions to a problem	6.00 0 3	6.08 .90 12	5.28 1.49 18	4.00 1.00 3	6.00 1.00 3	6.67 .58 3
25. Describe the application and likely consequences of possible alternative problem solutions	6.00 0 3	5.55 1.37 11	5.11 1.49 18	4.00 1.00 3	5.67 .58 3	6.33 .58 3
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.33 .58 3	5.50 1.57 12	5.11 1.57 18	4.33 .58 3	5.67 1.16 3	6.33 .58 3
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	6.33 .58 3	4.25 2.22 12	4.61 2.15 18	3.67 1.53 3	4.67 2.08 3	7.00 0 3
28. Estimate weight of various objects of different shapes, sizes, and makeup	5.33 1.16 3	4.50 1.73 12	4.39 1.82 18	2.33 1.53 3	4.00 1.00 3	6.67 .58 3
29. Estimate length, width, height, and distance between objects	5.33 1.16 3	4.92 1.98 12	4.33 2.06 18	2.33 1.53 3	4.33 1.16 3	6.67 .58 3

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
	Medical Records	Health Occupations Cooperative Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
21. Judge the credibility of a source of information	x=5.00 sd=0 n=1	5.38 1.30 8	6.00 0 1	5.20 1.30 5	5.56 1.27 57
22. Identify important information needed to solve a problem	5.00 0 1	6.00 .76 8	6.00 0 1	5.40 .89 5	5.93 1.05 57
23. Identify other's and one's own assumptions relating to a problem	5.00 0 1	5.63 .92 8	6.00 0 1	4.80 .84 5	5.39 1.22 57
24. Generate or conceive of possible alternative solutions to a problem	5.00 0 1	6.00 .82 7	6.00 0 1	4.75 .50 4	5.60 1.20 55
25. Describe the application and likely consequences of possible alternative problem solutions	5.00 0 1	6.00 .58 7	7.00 0 1	4.00 .82 4	5.35 1.29 54
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.00 0 1	5.88 .84 8	7.00 0 1	4.00 1.00 5	5.35 1.38 57
Planning					
27. Sort objects according to similar physical characteristics including shape, color, and size	5.00 0 1	4.63 1.51 8	7.00 0 1	3.20 2.17 5	4.63 2.02 57
28. Estimate weight of various objects of different shapes, sizes, and makeup	3.00 0 1	4.13 1.73 8	4.00 0 1	2.40 1.52 5	4.21 1.80 57
29. Estimate length, width, height, and distance between objects	3.00 0 1	4.38 1.60 8	6.00 0 1	2.40 1.52 5	4.37 1.94 57

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
21. Judge the credibility of a source of information	$\bar{x}$=5.59 sd=1.14 n=22	4.50 .58 4	5.00 1.86 20	5.13 .64 8	4.50 .71 2	6.25 .89 8
22. Identify important information needed to solve a problem	6.05 1.00 22	5.50 .58 4	5.40 1.50 20	5.38 .52 8	5.50 .71 2	6.25 .89 8
23. Identify other's and one's own assumptions relating to a problem	5.64 .95 22	4.50 .58 4	4.85 1.39 20	4.75 .71 8	4.50 .71 2	5.63 .92 8
24. Generate or conceive of possible alternative solutions to a problem	6.23 .75 22	5.50 1.00 4	5.60 1.14 20	5.25 .71 8	6.00 1.41 2	6.25 .71 8
25. Describe the application and likely consequences of possible alternative problem solutions	6.18 .80 22	5.50 1.29 4	5.15 1.23 20	5.25 .89 8	5.50 2.12 2	6.25 .71 8
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.27 .94 22	5.00 2.16 4	5.05 1.50 20	5.13 1.64 8	4.50 3.54 2	6.00 .93 8
Planning						
27. Sort objects according to similar physical characteristics including shape, color, and size	6.23 1.11 22	4.25 2.06 4	5.60 1.96 20	4.63 1.85 8	4.50 3.54 2	6.38 .92 8
28. Estimate weight of various objects of different shapes, sizes, and makeup	4.50 1.54 22	3.50 1.29 4	5.60 1.93 20	3.63 1.19 8	3.50 2.12 2	5.00 1.41 8
29. Estimate length, width, height, and distance between objects	4.64 1.59 22	5.75 1.26 4	4.75 2.02 20	4.00 .93 8	6.50 .71 2	4.75 1.28 8

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
21. Judge the credibility of a source of information	x=5.00 sd=1.41 n=2	5.32 1.36 66				
22. Identify important information needed to solve a problem	4.50 2.12 2	5.70 1.16 66				
23. Identify other's and one's own assumptions relating to a problem	4.50 2.12 2	5.15 1.14 66				
24. Generate or conceive of possible alternative solutions to a problem	5.50 .71 2	5.84 .95 66				
25. Describe the application and likely consequences of possible alternative problem solutions	5.50 2.12 2	5.68 1.11 66				
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.00 2.83 2	5.56 1.49 66				
Planning						
27. Sort objects according to similar physical characteristics including shape, color, and size	5.50 2.12 2	5.67 1.70 66				
28. Estimate weight of various objects of different shapes, sizes, and makeup	3.50 .71 2	4.67 1.72 66				
29. Estimate length, width, height, and distance between objects	4.50 2.12 2	4.73 1.63 66				

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
21. Judge the credibility of a source of information	x=5.00 sd=2.00 n=5	4.50 1.92 4	5.00 0 1	6.00 .82 4	5.25 1.41 20	5.56 1.34 41
22. Identify important information needed to solve a problem	6.00 1.00 5	5.75 .96 4	5.00 0 1	6.25 .50 4	5.80 1.11 20	6.29 .96 41
23. Identify other's and one's own assumptions relating to a problem	4.20 1.48 5	4.00 1.63 4	3.00 0 1	6.00 .82 4	5.10 .97 20	5.02 1.54 41
24. Generate or conceive of possible alternative solutions to a problem	5.80 1.10 5	5.50 1.00 4	3.00 0 1	6.00 .82 4	5.85 .99 20	5.71 1.29 41
25. Describe the application and likely consequences of possible alternative problem solutions	5.00 2.12 5	4.50 2.08 4	3.00 0 1	6.25 .50 4	5.45 1.28 20	5.27 1.40 41
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.80 1.10 5	5.50 1.00 4	3.00 0 1	6.50 .58 4	5.40 1.10 20	5.46 1.29 41
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.00 1.23 5	4.50 .58 4	4.00 0 1	6.25 .50 4	5.70 1.42 20	5.37 1.46 41
28. Estimate weight of various objects of different shapes, sizes, and makeup	5.20 1.79 5	4.75 1.71 4	3.00 0 1	5.75 1.26 4	5.16 1.64 19	4.34 1.64 41
29. Estimate length, width, height, and distance between objects	5.20 1.79 5	4.75 1.71 4	3.00 0 1	5.50 1.29 4	6.15 .99 20	4.95 1.61 41

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
21. Judge the credibility of a source of information	x=6.00 sd=1.41 n=2	5.14 .90 7	4.46 1.41 24	4.67 2.07 6	6.00 0 2	6.20 .84 5
22. Identify important information needed to solve a problem	6.50 .71 2	5.86 1.07 7	5.67 .96 24	5.17 1.72 6	7.00 0 2	6.40 .89 5
23. Identify other's and one's own assumptions relating to a problem	4.00 1.41 2	5.43 .98 7	4.63 .97 24	4.33 1.86 6	6.50 .71 2	5.40 1.52 5
24. Generate or conceive of possible alternative solutions to a problem	5.50 .71 2	6.43 .79 7	5.33 .87 24	5.00 2.00 6	7.00 0 2	5.60 1.67 5
25. Describe the application and likely consequence of possible alternative problem solutions	4.50 2.12 2	6.43 .79 7	4.92 1.06 24	4.83 1.94 6	7.00 0 2	5.40 1.52 5
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.50 2.12 2	6.29 1.11 7	5.13 1.33 24	4.67 2.25 6	6.00 0 2	5.60 1.67 5
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	6.00 0 2	6.57 .79 7	5.13 1.39 24	5.67 .82 6	6.00 0 2	6.40 .55 5
28. Estimate weight of various objects of different shapes, sizes, and makeup	3.00 1.41 2	5.71 1.11 7	4.54 1.25 24	4.50 .84 6	6.00 0 2	6.00 1.23 5
29. Estimate length, width, height, and distance between objects	5.50 2.12 2	6.14 .69 7	5.75 1.03 24	6.33 .52 6	5.50 .71 2	6.20 .45 5

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
21. Judge the credibility of a source of information	$\bar{x}$=4.96 sd=1.69 n=26	4.80 1.03 10	4.67 .58 3	5.40 1.16 25	5.50 .71 2	4.00 1.80 17
22. Identify important information needed to solve a problem	5.89 1.24 26	6.00 1.16 10	5.33 1.16 3	6.24 1.05 25	6.50 .71 2	5.24 1.64 17
23. Identify other's and one's own assumptions relating to a problem	4.73 1.54 26	5.20 1.55 10	5.00 0 3	5.52 1.30 25	6.00 1.41 2	4.18 1.88 17
24. Generate or conceive of possible alternative solutions to a problem	5.50 1.27 26	5.70 1.06 10	5.33 .58 3	6.16 .85 25	5.50 .71 2	5.82 1.07 17
25. Describe the application and likely consequence of possible alternative problem solutions	5.08 1.41 26	5.70 1.16 10	5.00 1.00 3	6.00 1.04 25	4.50 .71 2	4.88 1.58 17
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.15 1.62 26	5.70 1.16 10	5.33 .58 3	6.13 .95 24	5.50 .71 2	4.82 1.74 17
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.15 1.95 26	5.90 .74 10	5.33 1.16 3	5.12 1.69 25	6.50 .71 2	4.94 1.85 17
28. Estimate weight of various objects of different shapes, sizes, and makeup	4.68 1.84 25	4.10 1.45 10	5.33 1.16 3	3.76 2.05 25	3.50 3.54 2	3.77 2.25 17
29. Estimate length, width, height, and distance between objects	6.00 1.53 25	4.90 1.79 10	5.00 1.00 3	4.20 2.06 25	3.50 3.54 2	5.00 1.90 17

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
21. Judge the credibility of a source of information	$\bar{x}$=4.57 sd=1.24 n=23	5.40 1.14 5	4.96 1.25 26	4.50 .71 2	5.50 1.20 8	2.00 0 1
22. Identify important information needed to solve a problem	5.65 1.07 23	5.80 1.10 5	5.42 1.14 26	6.00 0 2	5.63 .92 8	5.00 0 1
23. Identify other's and one's own assumptions relating to a problem	4.61 1.31 23	4.20 1.10 5	4.60 1.38 25	5.50 .71 2	4.38 1.51 8	2.00 0 1
24. Generate or conceive of possible alternative solutions to a problem	5.22 1.28 23	5.80 .84 5	5.28 1.28 25	6.00 0 2	5.50 1.41 8	5.00 0 1
25. Describe the application and likely consequence of possible alternative problem solutions	4.83 1.27 23	5.40 .89 5	4.92 1.28 24	5.50 .71 2	5.50 1.41 8	2.00 0 1
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.09 .87 22	5.40 1.14 5	5.22 1.13 23	5.50 .71 2	5.38 1.30 8	5.00 0 1
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.04 1.52 23	5.20 1.64 5	5.40 1.29 25	6.00 0 2	5.63 2.00 8	4.00 0 1
28. Estimate weight of various objects of different shapes, sizes, and makeup	4.35 1.61 23	4.80 1.30 5	4.88 1.54 25	5.00 1.41 2	3.86 1.87 7	5.00 0 1
29. Estimate length, width, height, and distance between objects	5.48 1.47 23	5.00 1.58 5	6.00 1.16 25	6.50 .71 2	5.88 1.13 8	5.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
21. Judge the credibility of a source of information	x=6.33 sd= .82 n=6	5.00 2.83 4	4.75 1.29 12	5.00 1.41 2	3.00 0 1	6.00 0 1
22. Identify important information needed to solve a problem	6.17 .75 6	6.25 .96 4	5.33 .78 12	4.50 2.12 2	3.00 0 1	6.00 0 1
23. Identify other's and one's own assumptions relating to a problem	5.83 .98 6	4.00 2.16 4	4.67 1.07 12	4.50 2.12 2	2.00 0 1	4.00 0 1
24. Generate or conceive of possible alternative solutions to a problem	5.67 .82 6	6.25 .96 4	5.25 .87 12	5.50 .71 2	3.00 0 1	5.00 0 1
25. Describe the application and likely consequence of possible alternative problem solutions	5.50 .84 6	6.25 .96 4	5.42 1.08 12	5.50 2.12 2	3.00 0 1	5.00 0 1
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	5.50 1.23 6	5.75 1.26 4	5.50 .91 12	5.00 2.83 2	3.00 0 1	5.00 0 1
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	5.83 1.47 6	5.50 1.73 4	4.08 1.88 12	5.50 2.12 2	6.00 0 1	6.00 0 1
28. Estimate weight of various objects of different shapes, sizes, and makeup	5.33 1.51 6	4.50 3.00 4	3.50 1.62 12	3.50 .71 2	6.00 0 1	6.00 0 1
29. Estimate length, width, height, and distance between objects	5.33 1.51 6	6.25 .96 4	4.00 1.60 12	4.50 2.12 2	7.00 0 1	6.00 0 1

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
REASONING SKILLS (continued)	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
21. Judge the credibility of a source of information	x=5.00 sd=0 n=1	3.00 1.73 3	6.50 1.00 4	5.04 1.46 303		5.21 1.40 598
22. Identify important information needed to solve a problem	6.00 0 1	3.33 1.16 3	6.50 1.00 4	5.81 1.15 303		5.83 1.09 598
23. Identify other's and one's own assumptions relating to a problem	5.00 0 1	3.67 2.31 3	5.57 1.50 4	4.83 1.44 302		4.99 1.36 597
24. Generate or conceive of possible alternative solutions to a problem	5.00 0 1	4.33 1.16 3	6.25 .96 4	5.60 1.16 302		5.64 1.12 595
25. Describe the application and likely consequence of possible alternative problem solutions	5.00 0 1	3.67 2.31 3	6.25 .96 4	5.25 1.36 301		5.37 1.28 593
26. Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue	6.00 0 1	3.67 2.31 3	6.00 .82 4	5.38 1.30 298		5.44 1.31 593
Planning 27. Sort objects according to similar physical characteristics including shape, color, and size	6.00 0 1	4.00 1.73 3	4.50 2.08 4	5.31 1.53 302		5.01 1.79 597
28. Estimate weight of various objects of different shapes, sizes, and makeup	5.00 0 1	4.00 1.73 3	4.25 2.06 4	4.49 1.72 299		4.21 1.80 593
29. Estimate length, width, height, and distance between objects	6.00 0 1	4.33 1.16 3	5.00 .82 4	5.35 1.57 301		4.72 1.85 594

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=6.27 sd=1.16 n=15	5.69 1.35 16	5.33 1.51 6	5.00 2.83 2	7.00 0 1	5.85 1.37 40
31. Set priorities or the order in which several tasks will be accomplished	6.20 1.08 15	6.00 .97 16	6.17 .98 6	6.00 1.41 2	7.00 0 1	6.13 .99 40
32. Set the goals or standards for accomplishing a specific task	6.07 1.10 15	6.00 1.10 16	6.17 .98 6	5.50 .71 2	5.00 0 1	6.00 1.04 40
33. Enumerate a set of possible activities needed to accomplish a task	5.73 1.28 15	5.63 1.03 16	5.17 .98 6	5.50 .71 2	6.00 0 1	5.60 1.08 40
34. Determine how specific activities will assist in accomplishing a task	5.60 1.55 15	5.50 1.10 16	5.17 1.60 6	5.50 .71 2	6.00 0 1	5.50 1.30 40
35. Select activities to accomplish a specific task	5.60 1.45 15	5.69 1.02 16	5.33 1.37 6	5.50 .71 2	6.00 0 1	5.60 1.19 40
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.07 .96 15	5.94 .93 16	5.50 1.23 6	5.50 .71 2	6.00 0 1	5.90 .96 40
37. Estimate the time required to perform activities needed to accomplish a specific task	5.67 1.05 15	5.56 1.15 16	5.33 1.21 6	5.50 2.12 2	6.00 0 1	5.58 1.11 40
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	6.07 1.22 15	6.00 1.03 16	5.17 1.17 6	5.50 .71 2	7.00 0 1	5.90 1.13 40

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
30. Use the senses of touch, sight, smell, taste. and hearing	$\bar{x}$=7.00 sd=0 n=2	6.00 1.41 4	7.00 0 1	5.05 1.35 19	4.43 1.90 7	4.00 2.04 28
31. Set priorities or the order in which several tasks will be accomplished	6.50 .71 2	6.00 .82 4	7.00 0 1	5.68 1.11 19	6.29 1.11 7	6.32 .91 28
32. Set the goals or standards for accomplishing a specific task	6.50 .71 2	6.25 .50 4	7.00 0 1	5.58 1.39 19	6.43 .79 7	5.93 1.59 28
33. Enumerate a set of possible activities needed to accomplish a task	6.50 .71 2	6.25 .50 4	7.00 0 1	5.21 .98 19	6.43 .79 7	5.96 1.35 28
34. Determine how specific activities will assist in accomplishing a task	6.50 .71 2	6.25 .50 4	7.00 0 1	5.26 1.10 19	6.29 1.11 7	5.71 1.61 28
35. Select activities to accomplish a specific task	6.50 .71 2	6.25 .50 4	7.00 0 1	5.26 1.15 19	6.43 .79 7	5.86 1.58 28
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.50 .71 2	6.50 .58 4	7.00 0 1	5.37 1.12 19	6.57 .54 7	6.43 .74 28
37. Estimate the time required to perform activities needed to accomplish a specific task	6.50 .71 2	6.00 .82 4	7.00 0 1	5.21 1.08 19	6.00 1.41 7	5.54 1.73 28
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.00 1.41 2	5.25 .96 4	6.00 0 1	5.11 .94 19	6.43 .79 7	5.61 1.75 28

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
REASONING SKILLS (continued)	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
30. Use the senses of touch, sight, smell, taste, and hearing	x=4.57 sd=1.99 n=7	6.00 0 1	7.00 0 1	3.00 0 1	4.12 2.01 25	4.53 1.64 15
31. Set priorities or the order in which several tasks will be accomplished	6.29 1.50 7	7.00 0 1	7.00 0 1	6.00 0 1	6.54 1.24 26	6.20 .78 15
32. Set the goals or standards for accomplishing a specific task	6.00 1.41 7	7.00 0 1	7.00 0 1	5.00 0 1	6.35 .89 26	6.13 .83 15
33. Enumerate a set of possible activities needed to accomplish a task	6.00 1.16 7	7.00 0 1	7.00 0 1	6.00 0 1	5.73 1.43 26	5.60 .74 15
34. Determine how specific activities will assist in accomplishing a task	5.57 1.13 7	7.00 0 1	7.00 0 1	6.00 0 1	5.65 1.52 26	5.67 .82 15
35. Select activities to accomplish a specific task	6.14 .90 7	7.00 0 1	7.00 0 1	6.00 0 1	5.92 1.47 26	5.73 1.03 15
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.71 .49 7	7.00 0 1	7.00 0 1	6.00 0 1	6.04 1.18 26	5.80 1.01 15
37. Estimate the time required to perform activities needed to accomplish a specific task	5.71 1.38 7	7.00 0 1	7.00 0 1	5.00 0 1	6.12 .95 26	5.53 1.06 15
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.29 1.80 7	6.00 0 1	7.00 0 1	6.00 0 1	5.96 1.25 26	5.53 1.13 15

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
30. Use the senses of touch, sight, smell, taste, and hearing	x=5.33 sd=1.53 n=3	3.67 1.53 3	5.00 0 1	4.40 2.70 5	5.25 1.28 8	4.57 1.85 131
31. Set priorities or the order in which several tasks will be accomplished	5.00 1.73 3	5.67 1.53 3	7.00 0 1	6.60 .89 5	6.00 2.07 8	6.21 1.16 132
32. Set the goals or standards for accomplishing a specific task	5.33 1.53 3	5.33 1.16 3	7.00 0 1	6.80 .45 5	6.13 1.13 8	6.08 1.19 132
33. Enumerate a set of possible activities needed to accomplish a task	5.33 2.08 3	6.00 1.00 3	7.00 0 1	6.60 .89 5	5.75 2.05 8	5.84 1.25 132
34. Determine how specific activities will assist in accomplishing a task	5.00 1.73 3	5.67 1.16 3	7.00 0 1	6.80 .45 5	5.50 2.07 8	5.74 1.35 132
35. Select activities to accomplish a specific task	5.00 1.73 3	6.33 .58 3	7.00 0 1	7.00 0 5	5.88 2.03 8	5.91 1.33 132
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	5.00 1.73 3	6.00 1.00 3	7.00 0 1	6.80 .45 5	6.25 1.17 8	6.13 1.03 132
37. Estimate the time required to perform activities needed to accomplish a specific task	5.00 1.73 3	6.00 1.00 3	5.00 0 1	6.40 .89 5	5.75 1.04 8	5.74 1.26 132
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.33 1.53 3	6.33 .58 3	7.00 0 1	6.40 .55 5	5.75 2.05 8	5.68 1.36 132

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
REASONING SKILLS (continued)	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
30. Use the senses of touch, sight, smell, taste, and hearing	x=6.00 sd=1.00 n=3	6.33 .99 12	6.72 .58 18	7.00 0 3	7.00 0 3	7.00 0 3
31. Set priorities or the order in which several tasks will be accomplished	7.00 0 3	6.50 1.00 12	6.56 .98 18	7.00 0 3	7.00 0 3	7.00 0 3
32. Set the goals or standards for accomplishing a specific task	7.00 0 3	6.33 1.16 12	6.06 1.21 18	6.33 1.16 3	5.67 1.16 3	6.67 .58 3
33. Enumerate a set of possible activities needed to accomplish a task	7.00 0 3	6.17 1.19 12	6.11 1.08 18	5.33 1.53 3	5.67 2.31 3	6.67 .58 3
34. Determine how specific activities will assist in accomplishing a task	7.00 0 3	6.08 1.31 12	5.44 1.50 18	5.33 1.53 3	6.67 .58 3	6.67 .58 3
35. Select activities to accomplish a specific task	7.00 0 3	6.00 1.35 12	5.50 1.54 18	6.33 1.16 3	6.67 .58 3	6.67 .58 3
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.67 .58 3	6.33 .99 12	6.39 .78 18	6.33 1.16 3	6.67 .58 3	7.00 0 3
37. Estimate the time required to perform activities needed to accomplish a specific task	6.67 .58 3	6.17 1.19 12	6.33 .77 18	6.33 1.16 3	6.67 .58 3	7.00 0 3
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	7.00 0 3	6.33 1.07 12	5.83 1.58 18	6.33 .58 3	6.33 1.16 3	7.00 0 3

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS	
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=4.00 sd=0 n=1	5.88 1.36 8	7.00 0 1	5.80 1.10 5	6.40 .96 57	
31. Set priorities or the order in which several tasks will be accomplished	6.00 0 1	6.43 .98 7	7.00 0 1	6.00 .82 4	6.58 .85 55	
32. Set the goals or standards for accomplishing a specific task	6.00 0 1	6.13 .99 8	5.00 0 1	6.00 0 5	6.18 1.02 57	
33. Enumerate a set of possible activities needed to accomplish a task	6.00 0 1	6.00 1.07 8	6.00 0 1	6.00 .71 5	6.11 1.10 57	
34. Determine how specific activities will assist in accomplishing a task	6.00 0 1	6.13 1.13 8	6.00 0 1	6.00 0 5	5.95 1.23 57	
35. Select activities to accomplish a specific task	6.00 0 1	5.75 1.28 8	6.00 0 1	5.80 .45 5	5.93 1.25 57	
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	4.00 0 1	6.38 1.19 8	6.00 0 1	6.40 .55 5	6.39 .88 57	
37. Estimate the time required to perform activities needed to accomplish a specific task	5.00 0 1	5.88 1.13 8	6.00 0 1	6.00 .71 5	6.25 .91 57	
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.00 0 1	6.00 1.31 8	7.00 0 1	5.80 .84 5	6.14 1.22 57	

		VOCATIONAL TRAINING AREAS AND PROGRAMS					
		HOME ECONOMICS OCCUPATIONS					
	REASONING SKILLS (continued)	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
30.	Use the senses of touch, sight, smell, taste, and hearing	x̄=6.73 sd= .63 n=22	5.75 1.26 4	6.65 .93 20	5.63 1.41 8	5.50 2.12 2	6.88 .35 8
31.	Set priorities or the order in which several tasks will be accomplished	6.68 .57 22	6.00 .82 4	6.90 .31 20	6.25 .89 8	6.50 .71 2	6.75 .71 8
32.	Set the goals or standards for accomplishing a specific task	6.55 .67 22	6.25 .50 4	6.74 .56 19	5.88 .64 8	6.50 .71 2	6.50 .76 8
33.	Enumerate a set of possible activities needed to accomplish a task	6.36 .73 22	5.50 1.00 4	6.35 .99 20	5.63 1.19 8	5.00 1.41 2	6.63 .74 8
34.	Determine how specific activities will assist in accomplishing a task	6.23 .69 22	5.25 1.50 4	6.20 1.11 20	5.63 1.51 8	4.50 2.12 2	6.50 .76 8
35.	Select activities to accomplish a specific task	6.48 .75 21	5.75 1.89 4	6.20 1.15 20	5.63 1.51 8	5.00 2.83 2	6.50 .76 8
36.	Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.23 .75 22	6.00 1.41 4	6.65 .59 20	5.50 1.07 8	5.50 2.12 2	6.63 .74 8
37.	Estimate the time required to perform activities needed to accomplish a specific task	6.05 1.40 22	5.50 1.29 4	6.80 .52 20	5.63 1.19 8	5.50 2.12 2	5.88 .99 8
38.	Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	6.00 1.38 22	5.75 1.26 4	6.45 .83 20	5.50 1.41 8	5.00 1.41 2	6.25 .71 8

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS				
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=6.00 sd=1.41 n=2	6.47 1.00 66				
31. Set priorities or the order in which several tasks will be accomplished	5.50 2.12 2	6.62 .70 66				
32. Set the goals or standards for accomplishing a specific task	4.50 .71 2	6.43 .75 65				
33. Enumerate a set of possible activities needed to accomplish a task	4.50 2.12 2	6.15 1.03 66				
34. Determine how specific activities will assist in accomplishing a task	4.50 2.12 2	6.02 1.14 66				
35. Select activities to accomplish a specific task	4.50 2.12 2	6.14 1.21 65				
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	4.50 2.12 2	6.23 .97 66				
37. Estimate the time required to perform activities needed to accomplish a specific task	4.50 2.12 2	6.11 1.22 66				
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.50 2.12 2	6.05 1.18 66				

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
30. Use the senses of touch, sight, smell, taste, and hearing	x=6.20 sd= .84 n=5	6.00 .82 4	3.00 0 1	6.00 .82 4	6.50 .76 20	5.88 1.29 41
31. Set priorities or the order in which several tasks will be accomplished	6,00 1.00 5	5.75 .96 4	3.00 0 1	6.00 .82 4	6.15 .99 20	6.05 1.20 41
32. Set the goals or standards for accomplishing a specific task	6.00 1.41 5	5.75 1.50 4	3.00 0 1	6.00 .82 4	6.45 .69 20	5.88 1.33 41
33. Enumerate a set of possible activities needed to accomplish a task	6.20 1.10 5	6.00 1.16 4	3.00 0 1	6.00 .82 4	5.75 .85 20	5.61 1.24 41
34. Determine how specific activities will assist in accomplishing a task	6.20 1.10 5	6.00 1.16 4	3.00 0 1	5.75 .50 4	5.80 .89 20	5.51 1.21 41
35. Select activities to accomplish a specific task	6.40 .89 5	6.25 .96 4	5.00 0 1	6.00 .82 4	5.95 .83 20	5.68 1.17 41
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.20 1.10 5	6.00 1.16 4	5.00 0 1	6.00 0 4	6.21 .92 19	6.22 1.01 41
37. Estimate the time required to perform activities needed to accomplish a specific task	6.00 1.00 5	5.75 .96 4	3.00 0 1	5.75 .50 4	6.15 .81 20	5.98 1.29 41
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.80 1.79 5	5.50 1.92 4	3.00 0 1	6.25 .50 4	5.65 1.35 20	6.22 1.15 41

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=6.50 sd= .71 n=2	6.43 .54 7	5.58 1.35 24	5.17 .98 6	6.00 1.41 2	6.20 .84 5
31. Set priorities or the order in which several tasks will be accomplished	5.50 .71 2	6.57 .54 7	5.71 1.08 24	6.33 .82 6	7.00 0 2	6.40 .55 5
32. Set the goals or standards for accomplishing a specific task	5.50 2.12 2	6.71 .49 7	5.50 1.14 24	5.33 1.51 6	6.50 .71 2	6.20 .45 5
33. Enumerate a set of possible activities needed to accomplish a task	4.50 2.12 2	6.71 .49 7	5.13 1.04 24	5.17 1.47 6	5.50 .71 2	6.40 .55 5
34. Determine how specific activities will assist in accomplishing a task	4.50 2.12 2	6.57 .54 7	5.21 .78 24	5.50 1.23 6	6.00 0 2	6.40 .55 5
35. Select activities to accomplish a specific task	5.00 1.41 2	6.14 .90 7	5.58 .93 24	5.83 .75 6	6.50 .71 2	6.00 .71 5
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	5.00 1.41 2	6.43 .79 7	5.79 1.02 24	6.00 .89 6	6.50 .71 2	6.40 .55 5
37. Estimate the time required to perform activities needed to accomplish a specific task	4.00 0 2	6.71 .76 7	5.46 1.10 24	6.17 .98 6	6.50 .71 2	5.80 1.30 5
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	6.50 .71 2	6.29 .95 7	5.54 .93 24	5.50 1.52 6	7.00 0 2	6.40 .89 5

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=4.54 sd=2.10 n=26	6.00 .94 10	6.33 .58 3	6.12 1.39 25	6.50 .71 2	4.88 2.06 17
31. Set priorities or the order in which several tasks will be accomplished	5.62 1.33 26	6.00 .82 10	6.00 1.00 3	6.16 .90 25	5.50 .71 2	5.82 1.63 17
32. Set the goals or standards for accomplishing a specific task	5.35 1.77 26	5.90 .99 10	6.00 0 3	5.92 1.14 24	6.00 0 2	5.53 1.46 17
33. Enumerate a set of possible activities needed to accomplish a task	5.23 1.53 26	5.80 1.14 10	5.67 1.53 3	5.76 1.17 25	5.00 1.41 2	5.41 1.81 17
34. Determine how specific activities will assist in accomplishing a task	4.92 1.52 26	5.80 1.03 10	6.00 1.00 3	5.96 1.14 25	6.00 1.41 2	5.18 1.88 17
35. Select activities to accomplish a specific task	5.31 1.46 26	5.89 1.05 9	6.00 1.00 3	6.00 1.00 25	6.00 1.41 2	5.06 1.82 17
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	5.65 1.44 26	5.60 1.35 10	6.33 .58 3	6.16 .90 25	6.50 .71 2	5.53 1.63 17
37. Estimate the time required to perform activities needed to accomplish a specific task	5.42 1.30 26	6.00 1.25 10	5.67 1.53 3	5.68 1.25 25	5.00 1.41 2	5.24 1.68 17
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.28 1.67 25	5.90 .99 10	6.00 0 3	5.92 .88 24	6.50 .71 2	5.06 1.71 17

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
REASONING SKILLS (continued)	Machine Shop	Combine Metal Trades	Welding	Tool and Die Making	Cosmetology	Refrigeration
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=5.30 sd=1.69 n=23	6.00 1.23 5	5.68 .95 25	4.00 1.41 2	6.25 1.17 8	6.00 0 1
31. Set priorities or the order in which several tasks will be accomplished	6.22 1.04 23	6.00 1.00 5	5.64 1.38 25	6.50 .71 2	5.88 1.36 8	5.00 0 1
32. Set the goals or standards for accomplishing a specific task	5.83 1.27 23	6.20 .84 5	5.68 1.38 25	5.50 2.12 2	6.00 1.07 8	4.00 0 1
33. Enumerate a set of possible activities needed to accomplish a task	5.87 1.01 23	5.80 1.30 5	5.48 1.45 25	6.00 1.41 2	5.50 1.41 8	5.00 0 1
34. Determine how specific activities will assist in accomplishing a task	5.70 .93 23	6.00 1.00 5	5.38 1.44 24	6.00 0 2	5.25 1.39 8	5.00 0 1
35. Select activities to accomplish a specific task	5.74 1.05 23	6.00 1.00 5	5.24 1.39 25	6.00 1.41 2	5.75 1.39 8	6.00 0 1
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.30 .93 23	6.40 .55 5	5.64 1.32 25	5.50 2.12 2	6.38 .74 8	5.00 0 1
37. Estimate the time required to perform activities needed to accomplish a specific task	5.78 1.00 23	6.20 .45 5	5.25 1.17 25	6.50 .71 2	6.63 .52 8	5.00 0 1
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	5.78 1.13 23	5.80 .84 5	5.73 .96 26	6.00 0 2	5.88 1.13 8	3.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
30. Use the senses of touch, sight, smell, taste, and hearing	$\bar{x}$=5.83 sd= .75 n=6	6.75 .50 4	4.50 2.15 12	6.00 1.41 2	6.00 0 1	3.00 0 1
31. Set priorities or the order in which several tasks will be accomplished	6.00 .63 6	5.75 1.26 4	4.92 1.24 12	5.50 2.12 2	3.00 0 1	6.00 0 1
32. Set the goals or standards for accomplishing a specific task	6.17 .75 6	4.75 2.63 4	4.92 1.44 12	4.50 .71 2	2.00 0 1	6.00 0 1
33. Enumerate a set of possible activities needed to accomplish a task	6.00 .89 6	5.00 2.71 4	4.58 1.73 12	4.50 2.12 2	2.00 0 1	6.00 0 1
34. Determine how specific activities will assist in accomplishing a task	6.00 .89 6	4.75 2.63 4	4.75 1.42 12	4.50 2.12 2	2.00 0 1	6.00 0 1
35. Select activities to accomplish a specific task	5.83 .98 6	5.25 2.87 4	5.00 1.54 12	4.50 2.12 2	2.00 0 1	6.00 0 1
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.00 .63 6	6.50 .58 4	4.83 1.27 12	4.50 2.12 2	4.00 0 1	5.00 0 1
37. Estimate the time required to perform activities needed to accomplish a specific task	6.00 .63 6	5.25 2.87 4	4.50 1.62 12	4.50 2.12 2	6.00 0 1	5.00 0 1
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	6.33 .52 6	4.75 2.63 4	5.00 1.41 12	5.50 2.12 2	3.00 0 1	5.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
30. Use the senses of touch, sight, smell, taste, and hearing	x=6.00 sd=0 n=1	4.00 1.73 3	7.00 0 4	5.65 1.50 302		5.59 1.61 596
31. Set priorities or the order in which several tasks will be accomplished	7.00 0 1	5.33 .58 3	6.50 1.00 4	5.90 1.16 302		6.13 1.11 595
32. Set the goals or standards for accomplishing a specific task	6.00 0 1	4.33 1.16 3	6.25 .96 4	5.73 1.32 301		5.95 1.22 595
33. Enumerate a set of possible activities needed to accomplish a task	5.00 0 1	4.00 1.73 3	6.50 1.00 4	5.53 1.34 302		5.73 1.27 597
34. Determine how specific activities will assist in accomplishing a task	6.00 0 1	4.00 1.73 3	6.00 1.16 4	5.49 1.29 301		5.65 1.29 596
35. Select activities to accomplish a specific task	6.00 0 1	4.00 1.73 3	6.25 .96 4	5.63 1.26 301		5.77 1.27 595
36. Determine the order of the activities or step-by-step process by which a specific task can be accomplished	6.00 0 1	5.00 0 3	6.75 .50 4	5.93 1.14 301		6.05 1.07 596
37. Estimate the time required to perform activities needed to accomplish a specific task	7.00 0 1	4.33 1.16 3	7.00 0 4	5.69 1.27 302		5.79 1.24 597
38. Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task	6.00 0 1	5.00 1.73 3	7.00 0 4	5.73 1.28 301		5.80 1.28 596

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	AGRICULTURAL OCCUPATIONS					
	Agricultural Mechanics	Ornamental Horticulture	Agricultural Cooperative Education	Conservation	Cooperative Work Training	ALL AGRICULTURAL OCCUPATIONS PROGRAMS
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=6.40 sd= .99 n=15	6.13 1.03 16	5.83 1.17 6	6.00 1.41 2	7.00 0 1	6.20 1.02 40
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.71 1.07 14	5.19 1.11 16	4.67 1.37 6	4.00 0 2	5.00 0 1	5.23 1.16 39

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Advertising Services	General Merchandise (Sales)	Personal Services (Sales)	Marketing Cooperative (D.E.)	Accounting and Computer Occupations	Business Data Processing Systems
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=5.00 sd=1.41 n=2	5.25 .96 4	6.00 0 1	5.21 1.13 19	6.29 1.11 7	5.79 1.55 28
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.00 1.41 2	5.75 1.26 4	6.00 0 1	4.32 1.64 19	6.29 1.11 7	5.79 1.55 28

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Computer Programming	Filing, Office Machines	General Office Clerking	Executive Secretary Science	Secretarial	Office Occupations Cooperative Education
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=5.86 sd= .90 n=7	7.00 0 1	7.00 0 1	7.00 0 1	5.92 1.47 26	5.67 1.05 15
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.86 1.07 7	7.00 0 1	6.00 0 1	5.00 0 1	5.75 1.39 24	4.64 1.55 14

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	BUSINESS, MARKETING, AND MANAGEMENT OCCUPATIONS					
	Cooperative Work Training (CWT)	Word Processing	Hospitality (Travel and Travel Service)	Clerical Occupations	Office Occupations	ALL BUS. MKT. & MANAGEMENT OCCUPATIONS PROGRAMS
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=5.33	6.33	6.00	6.60	5.88	5.79
	sd=1.53	.58	0	.55	2.10	1.33
	n=3	3	1	5	8	132
40. Revise or update, periodically, plans and activities for accomplishing a specific task	4.33	6.00	6.00	6.40	6.00	5.47
	1.16	1.00	0	.55	1.41	1.51
	3	3	1	5	8	129

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HEALTH OCCUPATIONS					
	Dental Assisting	Practical Nursing	Nurse Aide	Health Care Aide	Medical Assisting	Health Aide
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	$\bar{x}$=7.00 sd=0 n=3	6.50 .80 12	6.06 1.47 18	6.67 5.83 3	6.33 1.16 3	7.00 0 3
40. Revise or update, periodically, plans and activities for accomplishing a specific task	6.67 .58 3	5.50 1.51 12	4.44 1.98 18	5.33 2.08 3	5.00 2.00 3	6.00 1.73 3

	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HEALTH OCCUPATIONS				
REASONING SKILLS (continued)	Medical Records	Health Occupations Cooperative Education	Cooperative Work Training (CWT)	Health Occupations	ALL HEALTH OCCUPATIONS PROGRAMS
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=5.00 sd=0 n=1	6.13 1.13 8	7.00 0 1	5.80 .45 5	6.28 1.08 57
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.00 0 1	5.13 1.81 8	5.00 0 1	5.20 1.48 5	5.12 1.72 57

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	HOME ECONOMICS OCCUPATIONS					
	Child Care	Clothing Management, Production, and Service	Food Management, Production, and Service	Home Economics Cooperative Education	Interior Decorating	Child Development
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	$\bar{x}$=6.41 sd= .96 n=22	6.00 1.41 4	6.75 .44 20	5.63 1.30 8	5.50 2.12 2	6.50 .76 8
40. Revise or update, periodically, plans and activities for accomplishing a specific task	6.19 1.03 21	4.75 2.22 4	5.55 1.50 20	4.75 1.83 8	4.50 3.54 2	6.25 .71 8

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS				
	HOME ECONOMICS OCCUPATIONS				
	Cooperative Work Training (CWT)	ALL HOME ECONOMICS OCCUPATIONS PROGRAMS			
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=5.50 sd=2.12 n=2	6.35 1.00 66			
40. Revise or update, periodically, plans and activities for accomplishing a specific task	4.00 1.41 2	5.62 1.52 65			

	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
REASONING SKILLS (continued)	Air Conditioning	Heating	Appliance Repair	Automotive Services	Body and Fender Repair	Auto Mechanics
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	$\bar{x}$=6.40	6.25	3.00	6.25	6.40	6.44
	sd= .89	.96	0	.50	.68	1.10
	n=5	4	1	4	20	41
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.60	5.25	3.00	5.50	5.95	5.53
	2.19	2.36	0	.58	.89	1.49
	5	4	1	4	20	40

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Aircraft Maintenance	Commercial Art	Construction and Building Trades	Carpentry	Industrial Maintenance	Diesel Mechanic
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=7.00 sd=0 n=2	6.71 .49 7	6.04 .96 24	6.33 1.21 6	7.00 0 2	7.00 0 5
40. Revise or update, periodically, plans and activities for accomplishing a specific task	4.00 0 2	6.29 .95 7	5.21 1.10 24	5.50 1.87 6	5.50 .71 2	6.50 .58 4

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Drafting	Electrical Occupations	Industrial Electrician	Electronic Occupations	Radio/ Television Repair	Graphic Arts
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	$\bar{x}$=5.84 sd=1.46 n=25	6.40 .70 10	6.00 0 3	6.17 .87 24	6.50 .71 2	5.71 1.45 17
40. Revise or update, periodically, plans and activities for accomplishing a specific task	4.60 1.87 25	5.60 1.27 10	6.00 0 3	5.54 .93 24	5.00 1.41 2	4.63 1.93 16

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Machine Shop	Combine Metal Trade	Welding	Tool and Die Making	Cosmetology	Refrigeration
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x̄=6.52 sd= .79 n=23	6.80 .45 5	6.31 .88 26	6.00 1.41 2	6.50 .54 8	5.00 0 1
40. Revise or update, periodically, plans and activities for accomplishing a specific task	5.22 1.31 23	5.20 1.48 5	4.92 1.71 25	6.00 0 2	5.25 1.49 8	2.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS					
	INDUSTRIAL OCCUPATIONS					
	Small Engine Repair	Millwork and Cabinet Making	Industrial Cooperative Education	Cooperative Work Training (CWT)	Truck Driving	Warehousing
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	x=6.50 sd= .55 n=6	4.75 2.63 4	5.08 2.02 12	5.50 2.12 2	6.00 0 1	6.00 0 1
40. Revise or update, periodically, plans and activities for accomplishing a specific task	6.00 .63 6	5.25 2.87 4	3.83 1.53 12	4.00 1.41 2	2.00 0 1	6.00 0 1

REASONING SKILLS (continued)	VOCATIONAL TRAINING AREAS AND PROGRAMS INDUSTRIAL OCCUPATIONS Home Remodeling and Renovation	Custodial Maintenance	Communications and Media Specialist	ALL INDUSTRIAL OCCUPATIONS PROGRAMS		ALL VOCATIONAL TRAINING AREAS AND PROGRAMS
39. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task	$\bar{x}$=6.00	5.00	7.00	6.19		6.13
	sd=0	1.73	0	1.13		1.17
	n=1	3	4	301		596
40. Revise or update, periodically, plans and activities for accomplishing a specific task	6.00	4.33	6.50	5.24		5.32
	0	2.89	.58	1.53		1.52
	1	3	4	297		587